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## SOME FUNCTIONS OF THE CEREBRAL CORTEX

### BEAUMONT FOUNDATION LECTURE II. THE FRONTAL LOBES

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### I.

In his Rede Lecture on *The Brain and its Mechanism* delivered at Cambridge last December Sherrington draws a sharp distinction between the "physiological" and "mental" activities of the brain<sup>36</sup> (pp. 22-23). "What right," he asks, "have we to conjoin mental experience with physiological? No scientific right; only the right of what Keats, with that superlative Shakespearian gift of his dubbed 'busy common sense.' The right which practical life, naïve and shrewd, often exercises. . . . On the one side electrical potentials with thermal and chemical action making a physiological entity held together by energy relations; on the other, a suite of mental experience, an activity no doubt, but in what, if any, relation to energy? As for me, what little I know of the how of the one, does not, speaking personally, even begin to help me toward the how of the other." In another place Sherrington<sup>36</sup> remarks (p. 22), "The activity of

a single cell by itself can never amount to a mental experience. For that we have to seek rather some attribute of the organization itself."

I propose in this lecture to speak of the physiological functions of the cerebral cortex rather than of mental functions, and the



discussion will relate particularly to the frontal lobes. In dealing with the frontal lobes however one is brought face to face with activities that are difficult or impossible to describe in present-day physiological terminology. They verge upon the intellectual sphere, and perhaps significant is the fact that it is chiefly in connection with the frontal lobes that one encounters this problem. Lashley<sup>29</sup> has pointed out that the conventional ideas of localization of function can not be seriously entertained for higher intellectual activities. This appears true of the lower animals and it is possibly also true of the primates. It would indeed be a corollary of Sherrington's conclusion that mental experience and those more exalted faculties of the human intellect, such as judgment, appreciation of beauty, etc., depend upon the total organization of the brain, rather than upon the integrity of a restricted area. It is important to recognize this distinction between the mental and the physiological activities of the brain, as otherwise confusion is certain to arise in discussing problems of localization. One can no longer entertain doubt of the existence of physiological localization, for it rests, among other things, upon a sound anatomical basis.<sup>19</sup> Localization of the quasi-intellectual functions which have been attributed to the frontal areas offer a greater problem but one which I believe is soluble. Few, however, would venture at present to localize the higher intellectual faculties of the mind, unless they were bold enough to consider the unsolved riddle of the relation of mind to matter.

Knowledge of cortical function has rested in the past upon information obtained from a variety of different channels. Investigators have stimulated various regions of the brain and have recorded the results obtained. They have also destroyed circumscribed areas of the cortex and studied the characteristics of the ensuing deficit. These two methods have yielded valuable information, but it must be recalled that faradic stimulation is an unnatural form of excitation, and the deficit from a given cortical ablation does not always shed light upon the normal activity of the part removed. The work of Pavlov<sup>32</sup> and his followers introduced a more objective means of analyzing the results of ablation. The conditioned reflexes, which have received widespread attention as a result of Pavlov's investigations,

are a group of reactions which depend specifically upon the integrity of the cerebral cortex, *i.e.*, they are reflexes integrated at the cortical level. When the cerebral hemispheres are removed, previously established conditioned reflexes disappear and only the simplest forms of response—some doubt whether they are conditioned responses at all—can ever be reestablished. The conditioned reflex technique has already contributed to knowledge of functional localization in the cortex and it will probably present more in the future. Pavlov observed, for example, that removal of the occipital lobes from an animal conditioned to visual stimulation causes abolition or great impairment of the response to light. Similarly Krasnogorski<sup>28</sup> proved that motor conditioned reflexes disappear when the motor area is removed.

Progress in physiology generally depends upon the introduction of new methods of inquiry, and to Lashley<sup>29</sup> must be given a large share of the credit for advancing the study of cortical function through application of the training techniques of psychobiology, *i.e.*, maze-running, delayed reactions, problem boxes, etc. I have been fortunate in being able to collaborate with one of Professor Lashley's pupils, Dr. Carlyle Jacobsen, who, as an associate of Dr. Yerkes, has devoted his attention during the past few years to the frontal lobes,<sup>21, 22, 23, 24</sup> and what I am about to say concerning the relation of the frontal lobes to the acquisition and retention of complex skilled movements and to the study of delayed reactions is based entirely upon Dr. Jacobsen's investigations. My own interest has been largely confined to the more purely neurological disturbances which result from circumscribed lesions of the cortex, and I have been forced incidentally to devote much time and attention to the surgical problem of making these circumscribed lesions without injuring the immediately adjacent areas of the cortex. Such progress as has occurred has been largely dependent upon the union of these various techniques of study.

## II.

Anatomically the frontal lobe includes that part of the cerebral hemisphere lying rostral to the central sulcus (*i.e.*, the Rolandic fissure, as it was formerly called) and the corpus striatum. It is thus a purely cortical area, and in the primates, including



man, it is possible to distinguish four principal regions: (1) the motor area, in which lie the cells of origin of the pyramidal tract, (2) the premotor area, which also possesses motor function and lies immediately adjacent to the motor area, (3) the frontal eye fields, lying rostral to the motor area on the lateral surface of the hemisphere, and (4) the frontal area, which includes everything else in the frontal lobes, and in man comprises a large proportion of the frontal lobe. Though it is difficult to establish homologies between the brains of monkeys, anthropoid apes and man on the basis of anatomical sulci, the cortical areas just mentioned may be readily homologized on the ground of common microscopical structure, or cytoarchitecture as it is more accurately termed.

We can not here enter into the details of cortical cytoarchitecture, but a few salient features deserve emphasis.<sup>5</sup> The motor area differs from the premotor and from the eye fields in the structure of its fifth cortical layer in which are found the giant cells of Betz that give rise to the pyramidal pathways. The fifth layer of the premotor area and the eye fields also possess motor cells, but they are smaller although in other respects similar to the Betz cells. The frontal area differs from the other three by the virtual absence of motor cells from the fifth layer.

### III.

The motor area, since the days of Fritsch and Hitzig, has been looked upon as one of the regions of the cortex in which the physiological function could with certainty be localized. In Hitzig's monograph, *Untersuchungen über das Gehirn*,<sup>20</sup> published in 1874, exactly sixty years ago, the motor area of the monkey's brain was first accurately defined. In the same year David Ferrier working at the West Riding Lunatic Asylum revealed the fact that if the electrically excited region for the arm were removed, the arm suffered profound paralysis, eventually assuming the characteristic hemiplegic posture seen in human beings after an apoplectic stroke. Ferrier demonstrated some of his hemiplegic monkeys at the Medical Congress in London in 1881. Charcot, the great French neurologist, whose histrionic abilities were as remarkable as his clinical insight, exclaimed on seeing Ferrier's monkeys, "Ah, mais oui, c'est une malade"—It is a patient.<sup>9</sup> After that meet-

ing in London the motor area was actively studied, but little came forth until the well-known papers of Grünbaum and Sherrington<sup>17</sup> and Leyton and Sherrington<sup>30</sup> on the excitable cortex of the chimpanzee, orang and gorilla. There had been uncertainty as to the posterior limit of the motor area, but Grünbaum and Sherrington proved conclusively that with ordinary strength of stimulation the excitable cortex ended abruptly at the bottom of the central sulcus, and also that the Betz cells of the fifth cortical layer did not extend beyond this region. In doing this they made the first correlation between the cytoarchitecture of the cortex and its functional activity. They also observed that the anterior margin of the excitable area extended beyond the distribution of the Betz cells. In harmony with this, subsequent investigations have indicated that the area of the cortex responsive to electrical stimulation extends well into the premotor region both in man and animals.<sup>6</sup> The question therefore arises whether the premotor area, which is excitable though lacking in Betz cells, subserves functions different from those of the true motor area. The answer is decidedly in the affirmative as the following evidence will show.

### IV. THE MOTOR AREA

The motor, premotor, frontal and eye areas are designated respectively in the cytoarchitectural maps as areas 4, 6, 9 and 8.<sup>5</sup> In the diagram projected at the lecture these areas in the monkeys and chimpanzees and man were shown. Area 4, the region of origin of the pyramidal tract, when stimulated faradically, gives rise to movements of individual muscles. Separate foci can be demonstrated in man for all the large muscles of the body. In the anthropoid apes, foci are slightly less discrete, and in the monkey there is an even greater tendency for fusion;<sup>17</sup> thus it is difficult in the monkey to flex the index without movement of the thumb or third digit, whereas from cortical stimulation in man the index can readily be moved independently.<sup>11</sup>

The consequences of removing area 4 fall naturally under four headings<sup>12, 26</sup> flaccidity, reflex changes, return of power and "intellectual" deficit.

*Flaccidity.*—Contrary to generally accepted belief, a lesion sharply restricted to area 4 of monkey or chimpanzee gives rise



to a profound flaccid paresis.<sup>12</sup> This is particularly striking in the chimpanzee, in which, after removal of area 4 for the leg, the affected extremity may remain flaccid and motionless for a week after the lesion, and during the subsequent stages of recovery it fails at any time to show increase in resistance to passive manipulation. Power returns slowly, first at hip, then at knee and very late in the digits. Sometimes the fingers remain powerless for as long as two months, and during this period the muscles undergo extensive atrophy. We have never seen a spastic extremity following a lesion restricted to area 4.

*Reflex changes.*—All reflexes are at first depressed following removal of the motor area. The first reflex to reappear is generally flexion of the hip in response to a strong painful stimulus of the sole. Associated with this there may be weak extension of the toes, and finally after five or six days, a well-marked extensor Babinski response can be obtained; later the Chaddock sign appears. There is no lateral deviation of the toes,<sup>26</sup> i.e., no fanning sign associated with the Babinski response of an area 4 lesion. The signs of Rossolimo and Mendel-Bechterew are not exaggerated after lesions of area 4. Deep reflexes are depressed for a week or two and then return to normal; they may even become exaggerated though the extremity continues flaccid.

*Motor power.*—One of the unexplained phenomena of clinical neurology is the return of motor power following a cortical lesion. If the pyramidal area is completely extirpated what other part of the nervous system steps into the breach? Leyton and Sherrington<sup>30</sup> pointed out that it could not be the motor area of the opposite hemisphere, because its removal does not cause additional impairment on the ipsilateral side. We shall see in a moment that though true for the arm this is not strictly true for the leg,<sup>14</sup> and it is certainly not true for the premotor area in which rich bilateral representation exists.

*"Intellectual" deficit.*—Lashley<sup>29</sup> and Jacobsen<sup>22</sup> have trained animals to negotiate complex problem boxes and have then removed the motor area. Following the procedure the animals exhibited no failure of memory. Thus, if on account of the paralysis of its hand the animal can not work a problem box which it had previously mastered, it quickly uses its foot to accomplish

the same maneuvers. There is similarly no disturbance displayed in the delayed reaction test. If an animal sees food put under one of two cups, it selects the correct cup for food even after several minutes' delay.

#### V. THE PREMOTOR AREA

Turning now to the premotor area which is subdivided into two parts, area 6a $\alpha$  and 6a $\beta$ , one finds that under light ether anesthesia the entire region is responsive to electrical stimulation.<sup>6, 11</sup> The movements, however, are less discrete and tend to involve whole extremities rather than individual muscles. From the rostral part (area 6a $\beta$ ) complex and seemingly purposeful movements are often evoked. From its caudal part (area 6a $\alpha$ ) movements tend to be more discrete, but the discrete responses disappear when the cortex is incised superficially between areas 4 and 6; there can be no room for doubt that discrete movements depend upon the integrity of the pyramidal tract, since they disappear when area 4 is itself completely removed. If the premotor area is stimulated some weeks after complete ablation of area 4, the complex patterns of movement involving whole extremities and the "adversive" reactions such as turning of the head and eyes, still remain. The premotor area must therefore have connections with the spinal cord which are quite independent of the pyramidal tracts.

The effects of removing the premotor area will be discussed<sup>26</sup> under four headings, spasticity, reflex changes, return of motor power, "intellectual" deficit. The fifth category of disturbances, namely those which affect the autonomic nervous system, were considered in the last lecture.

*Spasticity and forced grasping.*—When the premotor area of a chimpanzee is removed at a primary operation, or after previous removal of the motor area, the animal develops, almost at once (i.e., within four or five hours of operation), a marked disturbance in the resting posture of the extremity characterized by great increase in resistance to passive manipulation. In the upper extremities the posture assumed is one of strong flexion, and in the lower extremity extension with slight abduction. Lengthening and shortening reactions are present and one experiences the "clasp-knife" effect when one attempts to overcome



the resistance to movement of a given joint. Particularly striking is the fact that strong spasticity develops in the extremities of an animal from which area 4 has previously been removed.

Associated with spasticity is the abnormal prehension response, generally referred to as "forced grasping." During the first week after the premotor area has been removed a strong flexion movement of the digits occurs whenever an object is placed in the hand, and the animal is unable to relax its grasp.<sup>15, 34</sup> So intense is the reaction that it is generally sufficient to support the animal's entire weight. In the course of one to two weeks forced grasping disappears, but removal of the premotor area from the second hemisphere will cause its return, in all four extremities. Spasticity tends to disappear when grasping disappears. Both phenomena, however, fluctuate in intensity with the position of the body in space,<sup>3</sup> and there is a curious reciprocal relation between these two manifestations of disordered posture. Thus, when an animal from which the premotor area has been removed bilaterally is placed in the lateral position, the extremities on the uppermost side exhibit forced grasping and little spasticity while the extremities of the under side show great spasticity and no forced grasping. The fact that forced grasping changes as does spasticity with the position of the body in space, places the phenomenon in the category of postural reflexes. There is reason therefore to believe that the premotor area is concerned in integration and correlation of the extra-pyramidal pathways.<sup>13</sup>

*Reflex changes.*—The reflex changes following extirpation of the premotor area are of considerable interest to neurologists because of their obvious localizing value. All tendon reflexes are immediately augmented after a premotor lesion, and this includes the special reflexes of the digits known as the signs of Rossolimo, Mendel-Bechterew and Hoffmann, which are evoked by applying stretch to the digital tendons.<sup>26, 35</sup> Tapping the plantar surface gives involuntary flexion of the toes (the sign of Rossolimo), tapping the dorsal surface of the foot gives a similar response (the sign of Mendel-Bechterew), and flicking the tips of the fingers causes flexion of the fingers and adduction of the thumb (the sign of Hoffmann). In addition to these tendon reflexes an exaggerated flexion response of the digits, sometimes

known as the "clutch" reflex of the toes (the opposite of the Babinski), is present on stroking of the plantar surface. A tendency toward lateral deviation of the toes (the fanning sign of Babinski) is also seen after a premotor lesion. On the basis of these reflex changes and those mentioned above under the motor area one can distinguish lesions of the motor from the premotor area.

*Motor power and ipsilateral representation.*—Following a primary lesion of the premotor area, great awkwardness develops in skilled movements, associated with reluctance to use the affected extremity (see next paragraph). Much more significant, however, is the fact that when the premotor area is removed after previous ablation of the motor area there is great augmentation in the preëxisting motor deficit. An animal from which the motor and premotor regions have been extirpated from one side regains, however, sufficient cortical control of the spastic contralateral extremities for running, walking, climbing, etc. If, however, the motor and premotor areas of the opposite hemispheres are also removed, the animal lapses into a state of permanent cortical paralysis, and the bodily reflex status of such a bilateral motor-premotor preparation is equivalent to that of a thalamic animal. If one of the cortical areas remains intact (motor or premotor of either hemisphere), the animal regains some degree of cortical innervation of all four extremities. This, it has seemed to us, gives indisputable evidence of bilateral representation in the motor and premotor areas.<sup>7, 13, 14</sup>

*"Intellectual" deficit.*—The curious awkwardness exhibited after isolated premotor lesions is due essentially to an impairment of the faculty of integrating skilled motor adjustments. Jacobsen has summarized his studies on the chimpanzee as follows:<sup>22</sup>

"The disturbances following unilateral lesions of the premotor area in chimpanzees are of a different character. Whereas lesions of area 4 rendered the execution of movements difficult, they did not impair the patterns of response to the specific latches of the problem boxes. By contrast, although unilateral premotor lesions did not result in residual motor deficits which made the execution of fine adaptive movements difficult, the organization of these movements, as patterns of response to the specific situations presented by the problem boxes, was greatly disturbed and necessitated post-operative relearning. This result is in harmony with the deductions of Campbell and others, from anatomical observations, that the premotor area plays an im-



portant role in the integration of the complex adaptive activities. Proper evaluation of the findings must await further experiments on bilateral extirpations of area 6 and its relation to the motor areas."

All this constitutes evidence that as one proceeds rostrally with frontal lobe extirpations deficit in the more purely intellectual sphere begins to make its appearance. The inability to carry out delicate motor adjustments, which is so striking in bilateral premotor animals, has been regarded as similar to the "apraxia" seen in clinical cases. On reaching the frontal association areas the problem passes even more poignantly into—shall I say—the "spiritual" plane!

## VI. FRONTAL ASSOCIATION AREAS

The frontal association areas have been something of a *bête noire* to neurophysiologists<sup>2</sup> whose attention is generally centered upon functional disturbances. When the frontal areas are removed unilaterally from monkeys, baboons, chimpanzees, or man no disturbances can be detected which are really amenable to physiological analysis—provided of course one does not encroach upon the eye fields. If these areas are disturbed the animal is unable to move its eyes to the opposite side for 24 to 48 hours; after that eye movements become normal. If, however, both frontal areas are removed changes occur which more readily lend themselves to analysis. Monkeys and baboons tend to become restless, pacing the floor constantly night and day. They generally lose weight and despite this fact they consume large quantities of food. The signs of pathological hunger, however, are more marked when the extirpation has encroached upon the anterior end of the premotor region. In human beings after bilateral removal of the frontal areas there is great distractibility and a tendency toward boastfulness and general euphoria, but behavior is not obviously bizarre except when matters of judgment and decision are involved. It may amuse you to know that a member of a certain stock exchange who lost both frontal areas on account of an expanding malignant tumor, was able after the operation to return to his business and he fancied that he carried on his duties without difficulty!<sup>14</sup>

There is no disturbance of the postural mechanism after bilateral frontal extirpa-

tion and no reflex changes, but Jacobsen's<sup>24</sup> analysis of trained animals has made it manifest that such animals have great difficulty in executing previously acquired skilled movements requiring a series of motor acts spread out in time and occurring in definite sequence. A problem box demanding a single maneuver is readily negotiated, but one calling for three different acts in set order is mastered only with great difficulty, if indeed it can be learned at all. Essentially, the loss appears to be a defect of "immediate memory," and this inability of the operated animal to regulate its present behavior in terms of immediately past experience is even more strikingly demonstrated in the delayed reaction tests. Thus a normal monkey is able, after a delay of several minutes, to select the cup under which food has been hidden; the animal with a bilateral extirpation of the frontal association areas obviously forgets, almost immediately and certainly within two or three seconds, under which one of the two cups the food had been placed. Experiments upon other areas of the cortex indicate that this behavioral deficit is found only with lesions of the frontal association areas.

Jacobsen<sup>25</sup> summarizes his conclusions as follows:

"It may indeed be hazardous to identify too closely the apparent defects in immediate memory observed in the monkeys with the deficit shown in cases of dementia in man, but the obvious similarity invites such a comparison. Baumann and Grünbaum have pointed out that in organic dementia the capacity to keep in mind a number of separate elements and at the same time manipulate them in thought is an outstanding deficit. The careful study of a case of bilateral frontal lobectomy in man by Brickner has indicated that there was little impairment of the symbolic processes, habits of speech, or the fund of information previously acquired by this individual. There was, however, marked inability to hold together and to manipulate the various elements of experience over a period of time, essentially a defect in logical thinking rather than a defect in recalling elementary associations. If now we consider the experiments on extirpation of frontal areas in the monkeys, we note that the outstanding defect is the inability to remember for even a few seconds in the face of other incoming sensory data a single experience, such as seeing food placed under one of two cups. To identify human reactions with delayed response in monkeys leaves one open to severe criticism, and such is not our intention, but we would point out that with the destruction of the frontal association areas there has been removed a mechanism which is essential to the more complex forms of behavior which we call logical thinking, judgment, etc., namely—the capacity to regulate the activity of the moment in terms of the immediately past experience. This ability seems to be peculiarly dependent upon the intactness of the frontal areas."



## VII. CLINICAL INFERENCES

The recent physiological studies on the functions of the frontal lobes throw light upon various phases of clinical neurology. In the first place the analysis of the deficits resulting from lesions of area 4 indicates that interruption of the pyramidal tract does not in itself cause spasticity. Indeed the early stages of recovery from ablation of the motor area are characterized by the opposite condition, namely a marked flaccid paresis. "Hypotonia" is said to occur in man with lesions of the postcentral convolution, but all reported cases show evidence of damage very close to the central sulcus (see especially Head<sup>18</sup>), and my suspicion is that in these cases the pyramidal tracts are damaged without serious impairment of the premotor radiations.

The lesions of the so-called motor area in man generally involve the anterior central gyrus, which includes the premotor area to a much greater extent than the motor area. I have illustrated this by placing a diagram of the small encapsulated tumor of Potts and Weisenburg's<sup>33</sup> well-known case upon Foerster's cytoarchitectural map of the human brain. The tumor was a small encapsulated carcinoma, 2 cm. in diameter, which lay just rostral to the central sulcus in the region of the arm representation. It will be seen that rather more than four-fifths of the surface of the hemisphere affected is occupied by area 6a $\alpha$  and area 8. It is scarcely surprising therefore, in view of experimental work, that the arm of the patient in question became spastic before death.

A still more interesting application of these experimental studies arises from a consideration of focal epileptic seizures. Irritation from an expanding lesion of area 4 or of the caudal part of area 6a $\alpha$  generally gives rise to seizures that begin focally in a small muscle or muscle group (*e.g.*, with movements of the thumb or corner of the mouth). Other seizures commence with turning of the head and with complex movements affecting a whole extremity, similar to those evoked by primary stimulation of area 6a $\beta$ . Recognition of such seizures<sup>11</sup> gives information of immediate localizing value. They are generally associated with a definite clinical picture which has been designated the "syndrome of the premotor area."<sup>16, 27</sup> When considered from the point of view of clinical history, the symp-

toms presented by such cases generally appear in definite sequence.

1. *Disturbance of skilled movements.*—A patient may discover that buttoning a shirt, turning an egg-beater, playing the piano or some other highly skilled act becomes difficult to perform even though gross power of the extremity remains normal. The deficit comes on without the occurrence of tremor and can not therefore be confused with disturbances in the cerebellum or basal ganglia. Gradually more extensive impairment of motor power develops with the appearance of spasticity.

2. *Spasticity and increase of reflexes.*—Some time later the patient becomes aware of awkwardness of movement, the extremity tends to become stiff, and examination discloses spasticity and increase in tendon reflexes. If the lesion happens to be slowly growing, the degree of spasticity is likely to be slight.

3. *Forced grasping.*—Late in the development of the premotor syndrome forced grasping appears, generally associated with very marked augmentation in tendon reflexes of the digits.<sup>16, 27</sup> If forced grasping is poorly developed it can generally be brought out by placing the patient in the lateral position with the affected extremity uppermost, which is the maximal position for the reaction. The Babinski response is generally not present, although lateral deviation of the toes may occur; occasionally exaggerated flexion of the toes is seen in response to plantar stimulation.

4. *Vasomotor disturbance.*—The whole affected side of the body may show vasomotor disturbance with increased sweating. In some instances the temperature is lower and in some instances higher than on the normal side. The experience with animals has been that with destruction of the premotor area the temperature of the affected extremities is generally lower (Lecture I), and this was the experience of Madame Bénisty<sup>1</sup> in war cases, and of Olsen<sup>31</sup> in cases of unilateral cerebral atrophy in children.

In addition to elucidating the premotor syndrome the experimental studies just described throw light upon the manifestations of hemiplegia seen in clinical cases. A hemorrhage destroying the internal capsule is likely to interrupt the radiations both from area 4 and 6 which would cause paresis with marked spasticity. One would



also expect on this basis the findings in the chimpanzee that forced grasping would be present in the affected extremity and that the posture would change with position of the body in space. Very little attention has been paid to forced grasping in hemiplegia, but the alteration of posture of hemiplegics with change of position of the body is well known and has been frequently described. Capsular hemiplegias associated with flaccid paresis are sometimes encountered, and they are generally accompanied by marked sensory deficit. Though autopsies on such cases have not yet been analyzed in the light of experimental findings, it seems likely that in such cases the hemorrhage is posteriorly situated in the capsule, sparing the radiations from area 6 which lie for the most part in the anterior end of the capsule.

The disclosures concerning the premotor area may in addition have a bearing upon athetosis. Bucy and Buchanan<sup>8</sup> had occasion to stimulate the premotor area in a case of extreme hemi-athetosis. The athetoid movements were prone to come in seizures; at operation stimulation of area 6a $\alpha$  in the region of the arm representation caused a typical athetoid seizure. The area of cortex from which the attack had been evolved was removed. The extirpated block of tissue conformed with the cytoarchitecture of Brodmann's areas 4 and 6a $\alpha$  and there was evidence of extensive cellular degeneration in all layers. Following the operation the athetoid movements ceased completely, and the extremity became slightly spastic. During several epileptiform seizures which occurred subsequently the arm was not involved. These clinical studies strongly suggest that a modification in extrapyramidal control resulting from extirpation of area 6 may lead to cessation of athetoid movements. The observation is highly significant and one awaits further clinical investigation with great interest.

\* \* \*

#### VI. SUMMARY

Mental and physiological functions of the brain, though closely related, for the present are best treated independently. Localization of physiological function has been clearly demonstrated, but the more subtle activities of the mind probably depend, as Sherrington has argued, upon the organization of the brain as a whole. Higher intellectual functions are nevertheless more gravely affected by lesions of the frontal areas than

by destruction of other portions of the cerebral hemispheres.

In the frontal lobe of monkeys, chimpanzees and man four principal regions may be distinguished: motor area, premotor area, eye field and frontal association area. Stimulation of the *motor* area gives rise to isolated movements of individual muscles. In chimpanzees ablations sharply restricted to the motor area cause flaccid paresis, depression of reflexes, and the extensor sign of Babinski, but no "intellectual" deficit. Return of power following a motor area lesion is extensive both in man and animals; though ipsilateral premotor and the opposite motor and premotor areas all play a part in compensating for the deficit.

Stimulation of the *premotor* area also evokes discrete movements in the muscles of the opposite side which are less sharply localized than those obtained from area 4. These are abolished when the cortex is superficially incised between areas 4 and 6, or when area 4 is removed; stimulation of the premotor region gives rise also to adverse movements of the head and eyes, and to complex patterns of response involving the ipsilateral as well as the contralateral extremities. These movements are independent of the pyramidal pathway. Removal of the premotor area in the chimpanzee causes impairment of skilled movements, spastic paresis, forced grasping and a form of intellectual deficit characterized by loss of complex patterns of response, and a limitation of the ability to reacquire them.

Bilateral destruction of the motor and premotor areas causes complete paralysis of all cortically innervated movements. Integrity of any one of these areas in one hemisphere makes possible cortically innervated movements in all four extremities.

Ablation of the *frontal association areas*, if bilateral, causes no disturbance of the postural mechanism and no alteration in reflexes. Animals in which such extirpations have been made become restless and easily distracted, and they exhibit loss of memory for acquired skilled movements with a complete failure of "immediate memory" which prevents them from profiting by recent sensory experience.<sup>25</sup>

It has been the case in the past, and it will be true in the future, that the chief stimulus to study the functions of the human body comes from those engaged in the practice of medicine. The generous recognition



which you as clinical investigators have given to me and to my physiological predecessors in this lectureship affords an incalculable stimulus. I can assure you, therefore, that the opportunity to lay this material before you is a high privilege, and one which affords fresh incentive to carry our work forward.

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## MICHIGAN'S CONTRIBUTION TO EARLY ROENTGENOLOGY\*

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Many of my predecessors, guided either by pure modesty, shyness or diffidence, have been inducted into the Presidency of the American Roentgen Ray Society with no other ceremony than the acceptance, with a few words of thanks and appreciation of the greatest honor that can be conferred by this, the most consequential group in the world organized to advance and protect the interests of Roentgenology. Others have used this occasion of investiture to bring to your attention some improvement in equipment, some advance in technic or some new application of our specialty in the diagnosis and treat-

\*Read before the meeting of the American Roentgen Ray Society held in Detroit in 1932.

†Dr. Evans, graduated in medicine from University of Michigan in 1902, practiced in Bellaire, Mich., for seven years, returning later to Detroit, where he became associated with Dr. P. M. Hickey. He was Assistant Roentgenologist to Harper Hospital until 1922, after which he became Chief Roentgenologist. He was also Roentgenologist to Marine Hospital, of Detroit; Michigan Mutual Hospital; Consultant for the Detroit City Tuberculosis Hospitals, and Professor of Roentgenology in Detroit College of Medicine. He is now serving his third term on the Board of Health.

ment of disease. Still others, braver spirits, assuming the rôle of prophets, have prognosticated—even to the ultimate of roentgenology and roentgenologists (and without reflection on these who would look into the future, it is a matter of history and



record that the many fearful predictions have not been fulfilled).

While your new presiding officer believes that he is equal in self-effacement, by nature and inclination, to those who entered into their new duties without undue formality and while he is too timid or cautious or unwise to foretell what is in store for us as practitioners of a most important medical specialty, he is of the opinion that the occasion is unusual and that circumstances justify his postponement for a few minutes the beginning of the scientific program arranged for this, the Thirty-third Annual Meeting of the American Roentgen Ray Society.

But at this moment it is meet that you be welcomed to Detroit. On two previous occasions Michigan roentgenologists have had the good fortune to serve as hosts to the American Roentgen Ray Society and its friends, the first gathering being held in 1910, with Dr. George E. Pfahler as president, and the second in 1926 under the presidency of the late Dr. Russell D. Carman and vice presidency of Dr. P. F. Butler. For this third opportunity to serve you, the Detroit and Michigan members are grateful and they and their confreres who have labored to make ready the several features of the program submitted to you, extend most friendly greetings. It is our hope and desire that you will find help and inspiration from our scientific program and relaxation and joy and fellowship in our non-medical sessions.

Believing that the time is propitious for the urging of our membership to give attention to the study and recording of the history of the development of our specialty in the several states, I have elected to address you on "Michigan's Contribution to Early Roentgenology" with the hope that others will deal likewise with their own states and thus provide our Society archives with material that will have human and historic interest to the membership that is and is to come. This desire to voice esteem and gratitude to the pioneers in our field is a just and proper one, for did not the Father of Medicine say, "I will honor as my father the man who teaches me the art"? And should we not have and show proper respect for our predecessors, for is it not true, as Sir Michael Foster observes, "that it is one of the lessons of history of science that each age steps on the shoulders of the ages which

have gone before; the value of each age is not its own, but is in part, a large part, a debt to its forerunners"?

As I undertake to evaluate and record the vital and interesting experiences of Keenan, Crane, Hulst, Hickey, Varney, Stevens, Case, and others, who contributed to the advancement of roentgenology in Michigan, I am conscious of the difficulty of my task. So pregnant is the theme, it is worthy of the skill of a William McMichael. Equally as enticing and thrilling as the autobiography of Dr. John Radcliffe's "Gold Headed Cane" would be a description of some of the unusual incidents in the lives and works of these pioneers who builded so well for us who have followed.

This is not the occasion and time will not permit me to give credit due to all who assisted in the development of roentgenology in Michigan. We are under especially heavy obligations to Dr. H. R. Varney for his very early and excellent work in connection with the determination of the value of x-ray in dermatology, and Dr. R. H. Stevens, entering roentgenology also from dermatology, contributed much of value, and the efforts of Case and others are worthy of mention. But three of the contributors were outstanding in their performance and it is of these I wish to speak—Kennan, Crane and Hulst—in the chronological order in which they began their studies and experimentation in x-ray.

For several years prior to 1895, many professional and a few amateur physicists were interested in high potential electrical equipment, repeating the experiments of Crookes, Hittorf and others who were observing the phenomena incident to the passage of electric currents of high tension through tubes of varying degrees of vacuity.

For many years we have held the opinion that the first demonstration and application of x-ray in Michigan was at the University at Ann Arbor in the laboratory of Professor H. S. Carhart, teacher of advanced physics. But we have only recently learned that his work was preceded, by several weeks, at least, by two senior students in the Physics Laboratory at our State Agricultural College. This information was obtained from an edition of the *Detroit Journal*, a daily newspaper, dated March 4, 1896. Under the headline, "Leather and Paper—X-rays Penetrated Them at the Agricultural College and Photographed in Solid Sub-



stances," was a description of the work of the students, McGee, '96, and Eastman, '97, who had been successful in obtaining satisfactory skiagrams, as they were then known. They had placed coins and a pencil in a purse on a sensitive plate and after four hours' exposure and development they were able to see clearly the coins and discern the lead in the pencil. And in a private communication from the College within the past few days, I learned that they had examined a bird and were able to demonstrate the skeletal structure. This apparently was the first anatomical study done in Michigan.

Apparently simultaneously, Carhart and his workers had made continuous effort to repeat the experiments of Roentgen. They had repeatedly tested every tube, Crookes and otherwise, in the laboratory collection, without being able to obtain any fluorescence outside of them. At this time the Packard Lamp Company was appealed to and they succeeded in furnishing Carhart with a tube that enabled him to obtain a fluoroscopic record of a hand on a tungstate of calcium screen and to produce a satisfactory record on a photographic plate. This, as stated above, was in the early months of 1896.

But the best and most continuing work was left to be done, not by a large state-supported laboratory with professional physicists and numerous trained assistants, but by a young amateur, almost singlehanded, with a limited equipment and a lesser opportunity for experimentation, in the person of S. M. Keenan. Mr. Keenan was, by vocation, a hospital administrator—but by nature, attainment and practice a scientist and investigator. In his spare hours he had studied physics and especially electricity, and, as rapidly as his purse would permit, he was accumulating electrical equipment. He possessed, at this time, an 18-inch, 2-disc static machine, a small air pump, a 95-volt electric motor and some lesser items. He had no Crookes or other exhausted tubes with which to attempt the production of x-rays, but he had been advised that the carbon filament lamp would serve the purpose and many nights were spent in trying this substitute—of course, without result.

By a curious coincidence, Mr. Keenan was confronted with an opportunity to go to Ann Arbor and consult Professor Carhart—he had followed him closely in his work on radiation and was familiar with his successful production of x-rays. In April, of

this 1896, a young man had entered as a patient in the Eloise Infirmary for treatment of a Flobert rifle injury to his foot. The possibility of determining the presence of a foreign body by means of the new method of examination was debated by Mr. Keenan, the amateur physicist, and Dr. Markel, Eloise Infirmary physician, and an appointment was made with Professor Carhart at the University and Dr. W. J. Herdman of the Medical Department faculty, who was interested on account of his connection with electro-therapeutics. The epoch-making examination was done on April 26, 1896. A sensitive plate was strapped to the injured foot and exposed for forty minutes. The developed plate demonstrated the presence of a bullet deeply imbedded in the region of the first metatarsal. Appreciating the value, for exact localization, of a lateral projection exposure, this was attempted, but owing to the frailty of the tube, the study was not completed. Certainly this was the first medical use of the roentgen ray in Michigan and one of the first in this country for foreign body demonstration. It should be added that on the following day the bullet was removed without difficulty.

It is a mystery why this extraordinary event did not make a greater impression on the medical faculty of our University. In the succeeding months and years, the development of roentgenology was exceedingly slow there, for it was not until 1913 that the Regents began to comprehend the significance and possibilities of the new science. They then appointed Dr. Van Zwaluwenburg Clinical Professor of Roentgenology, who, in spite of makeshift equipment and unsuitable quarters, rapidly established the University as a leader in roentgen diagnosis and treatment—a position maintained and enhanced by Dr. Preston M. Hickey and his successor, Dr. Fred J. Hodges.

Fortunately for Michigan medicine, the lessons to be gleaned from this early use of x-ray in surgery were not lost to all. Mr. Keenan redoubled his efforts, often working the entire night, and with the technical aid of his wife and the financial aid of a Detroit citizen—Mr. Joseph Bresler—generating apparatus was developed and tubes supplied. Within less than three months of the successful Ann Arbor demonstration, Mr. Keenan was obtaining satisfactory roentgenograms, and for six years, or until Dr. Varney and Dr. Hickey equipped laborato-



ries in Detroit, he did practically all the roentgenology done in Detroit and Wayne County.

Early in 1897, a patient consulted Dr. Don M. Campbell of Detroit for an eye injury. The presence of a metallic foreign body was suspected and a roentgen study by Mr. Keenan demonstrated its presence. Subsequently, the foreign body was removed, the operation being definitely aided by the roentgen findings. Dr. F. H. Williams of Boston a little earlier had demonstrated a metallic foreign body in the orbit, but it was non-magnetic and not removed, so the distinction of first applying x-ray to the diagnosis and removal of ocular foreign body goes to Dr. Campbell and Mr. Keenan.

We must admire the spirit which impelled Mr. Keenan to continue his studies. In spite of time limitations, forced by the necessity of his performing the duties incident to his position on the administration staff of the Infirmary, though retarded by lack of funds with which to buy new equipment or replace worn out and old equipment, and though handicapped by lack of medical training and access to current medical literature, he persisted in his efforts and very early became a valuable member of the then young American Roentgen Ray Society. It was Mr. Keenan who gave inspiration to Dr. Hickey—and not only inspiration but practical assistance and instruction, and further it was through Mr. Keenan's suggestion and insistence that Dr. Hickey attended the meeting of this Society in Buffalo in 1901 and joined its membership. It is interesting to contemplate what might have happened if this forward-looking student had had the advantage of medical training—and had retained his original gifts in spite of it. Likely he would have had the help of the several articles published in the *American Journal of the Medical Sciences* in 1896 on "The Clinical Application of Roentgen Rays" and as a result he would have hastened to a greater degree the adoption of roentgen study as a valuable diagnostic aid in his locality. The general lack of impression on the physicians of that day made by the report of committees by the editor of that journal to ascertain methods and results in the clinical application of the discovery is incomprehensible. Wherever the full significance of the several reports was appreciated, the advance of the new science was rapid. Witness Philadelphia, where

the survey was made and published—she has continually since had the distinction of affording her hospitals and people the very best in the science of roentgenology, giving it wide application as it developed and making many valuable contributions to its advance. Philadelphia medicine in general, and roentgenology in particular, is under heavy obligation to Leonard, Kassabian, Goodspeed, Pfahler, Pancoast, Manges and others. So, in Detroit and Michigan—while we have not attained the high standards of Philadelphia—a great stimulus was given by the work and example of Keenan and all honor is due him. During his membership in the Society, he was a valuable contributor to the development of apparatus and advance in technic and an efficient teacher. Owing to the policy of limiting members to those possessing a medical degree, Mr. Keenan withdrew, but he has maintained his interest and influence. It is to be hoped that the Society, recognizing his work and conscious of his contributions, will confer on him honorary membership.

At the time of Roentgen's announcement, Dr. A. W. Crane was just becoming established in Kalamazoo, Michigan, as a general practitioner but giving some special attention to laboratory diagnosis and to general surgery. His proficiency, personality and accomplishments qualified him for membership in the Medical Journal Club of his city and it was at a meeting of this Society that he first heard of x-rays—a fellow member, arriving late, informed the gathering of the Associated Press reports that one could look "through a box and see an iron weight."

The gospel of Crane was the gospel of John Hunter—"but why think, why not try the experiment?" So immediately he began to equip himself with information and apparatus and in a few months began one of the most brilliant careers in American roentgenology. Possessing mechanical and technical skill as well as pathological and clinical knowledge, he made early and repeated contributions in both directions. In the improvement of roentgen tubes, he appreciated the importance of having the target made of material of high density. He procured a piece of relatively thick iridioplatinum and had it substituted for the very thin platinum target with most satisfactory results. At the same time he made remarkable improvements in the design and construction



of interrupters. Previous to his experimentation, an interrupter could only be operated on a continuous current, but when his labors in this direction were finished, he had perfected an interrupter that would operate on alternating current.

Not content with making improvements in tubes and interrupters, he turned his attention to coils and here again, when his ideas were incorporated by coil builders, he had a generating apparatus of exceptional capacity and endurance. I am advised that Clyde Snook, while working with Crane, received ideas and suggestions from him that assisted greatly in the development of the interrupterless transformer.

A technical contribution of far-reaching importance was in the design and construction of his fluoroscopic screen. Having, very early, a deep interest in the roentgen study of the chest, he perceived the advantage of a screen of sufficient size to permit a survey of the entire chest, so he had a screen of special size. For financial reasons he was desirous of conserving his new screen so he had it covered with glass and sealed with paraffin. Thus it was that, in spite of much work and long exposures, Dr. Crane was unharmed by the x-ray. The size of the screen and the protection afforded by the glass cover had been sufficient to preserve this pioneer from danger.

Still further evidence of his profound knowledge and insight into the requirements for the proper control and use of x-rays was the conception, design and construction of an instrument for the determination of the quantity and quality of his tube output. Since he was measuring shadows, he named his new device "the skiagraph." The same idea was developed later into instruments called penetrometers, with which only the earlier workers are familiar. And finally, he foresaw the advantage and necessity of concentration of the x-ray beam and fixation of the patient and he developed an apparatus with cone and fixation and compression device. With this relative perfection in tube, coil and interrupter and measuring instruments, it was natural that Crane could produce plates of the highest technical quality and be capable of doing fluoroscopy with unusual thoroughness. While others were requiring many minutes of exposure to obtain diagnostic plates, he was obtaining them in as many seconds. His work was of such a high standard that he was visited by im-

portant physicians from every large city—Leonard, Kassabian, Pfahler, Howard Kelley, Snook, and many others came to see and learn from the master.

Simultaneously, with these technical studies, Crane carried on their clinical application. His first interest was in the chest, and as early as September 27, 1898, he addressed the Kalamazoo Academy of Medicine on "The Roentgen Rays in Diseases of the Lungs." The *Philadelphia Medical Journal*, at that time, offered prizes for essays on medical subjects and Dr. Crane entered the contest with a paper entitled "Skiascopy of the Respiratory Organs." This article was published in the March, 1899, issue, it having been awarded second prize. The judges were evidently lacking in discernment and appreciation, for the subject receiving first place has been entirely forgotten while Crane's article, even today, stands as a model for guidance in fluoroscopy of the chest. It was this article that attracted Pfahler and other early eastern workers to Crane and Kalamazoo. Among these was Dr. W. J. Morton of New York, author of the earliest books on skiagraphy. Dr. Morton had London contacts, his father being Morton of anesthetic fame, and he suggested that Dr. Crane submit a paper to the London Roentgen Society. This was done and Dr. Crane became the first American, aside from Morton, to be honored by election to membership in this organization in 1899, a distinction gained by only a very few since.

His interest rapidly extended to the abdomen as his equipment developed and his advances and contributions here are equally noteworthy. Leonard of Philadelphia saw his first gastro-intestinal work with Dr. Crane, and Pfahler saw his first cancer of the stomach while visiting him. Howard Kelley, while in Kalamazoo, saw for the first time the appendix demonstrated fluoroscopically and by plate. And Dr. Bevan was the first surgeon to be impressed with the accuracy of Crane's work on renal stone demonstration. He was operating on a patient reported by Crane as having three stones—he found two and was inclined to disagree with the roentgen findings but Crane insisted on further search and the third was found. This case preceded the reported work of Leonard on renal calculi.

Dr. Crane attended the 1902 meeting of this Society in Chicago—he joined the following year and began a service to this or-



ganization not excelled by any other member. His scientific papers and exhibits on gastro-intestinal and other abdominal lesions were highlights, for years bringing renown and respect for himself and the Society. A service to the Society for which he was eminently fitted was aborted by the desire of a new publisher of our Journal to have an editor convenient to his place of business. After a few months of leadership of the highest order, the editorship was transferred to New York City.

As great as his technical and diagnostic contributions have been, they are equalled, if not excelled, by his influence for the development and maintenance of the best ethical standards for roentgenologists. His unselfishness and purity of purpose are illustrated by his refusal to accept a piece of apparatus offered by a manufacturer who had profited greatly by his advice and suggestions. As I have studied Crane and his work, I have come to the conclusion that he has contributed more than any other to the present high standard of American roentgenology, adding greatly to its scientific attainments and its respectability. He should be studied as an example by every one taking up the work he has so graced.

Another citizen of Michigan gifted with the power of medical vision into the future was a physician of Grand Rapids, Henry Hulst, one with a fine family and racial inheritance, of gentlemanly manner and bearing, of keen mechanical and scientific insight and steadfastness of purpose.

Following shortly the entrance of Keenan and Crane into the study of the mysterious x-ray, Hulst equipped himself first with a static machine and other necessary apparatus and began promptly a profound study of the thorax. He soon appreciated the necessity of the elimination of respiratory and cardiac movements if satisfactory plates of the thorax were to be obtained. Stimulated by what he had heard and seen in Kalamazoo, he experimented with various coils and interrupters until he found himself possessed with an equipment which made it possible for him to obtain excellent roentgenograms of the chest with exposures of a second and less. When this epoch-making accomplishment became known to his fellow workers, they journeyed to Grand Rapids, doubtful and suspicious, and insisting that he demonstrate and substantiate his announcement. Among these was Dr. Arthur

Holding, who represented a group who were suspicious that Hulst was faking or mistaken, and he went to Grand Rapids to make personal observations. After an evening in the laboratory, he wired Johnston and Boggs, his fellow doubters, "One-quarter second is straight goods."

The competitive spirit that God gives some men was highly developed in Hulst and he continued in the search for equipment and method that would satisfy his need—or shall I say greed—for power and speed. Time, effort and money, all were sacrificed. Building concrete platforms, adding silo-like additions to his home for housing his tower-like static machines, ordering coils of unheard-of capacity—these all indicate the intensity of his purpose. In his own words, "he was trying to catch the tail of the gamma rays."

Rivalling Crane with the quality of his plates, he was soon exhibiting at the Annual Meetings of the Society, first in Chicago in 1902, then in Philadelphia, St. Louis, Baltimore and Niagara Falls. He accumulated an exhibit of such exceptional quality that he was delegated by Dr. Caldwell, president in 1908, to represent him at the International Congress of Roentgenology at Amsterdam, and exhibit his plates. At the same time he addressed this group on "Soft Tissue Roentgenography." This exhibit excited the wonder and envy of all who saw it and his views on soft tissue demonstration were adopted with most satisfactory results. Again what a convincing priority in a field rather recently exploited by some of our contemporaneous workers. And paralleling Crane's advancement as a medical diagnostician made possible by information roentgenologically obtained, Hulst soon became an authority on pulmonary lesions. His writings and discussions on the nature of the root shadows and "linear" markings on chest plates indicate his intimate knowledge of the anatomy of the lung and the structural changes resulting from various diseases.

His rapid roentgenography enabled him to make some original observations of the gastro-intestinal tract. He, very early, demonstrated the changes in size, contour and position of the stomach, associated with changes in body position, similar studies being made on other abdominal structures and also the thoracic structures. His work in this connection excited the interest and at-



tention of anatomists and he was invited to important eastern medical schools to present the new method of observing and teaching anatomy.

His study of the appendix was original and valuable. He showed by several films the peristaltic action of the appendix and its mobility.

In the field of therapy, Hulst probably excelled Crane in the early years. In possession of a coil of great capacity, he was capable of procuring a volume of radiation of good quality with correspondingly good results.

An impairment in health permanently removed Hulst from active practice. Had he retained his physical capacity for work, his influence would have continued with that of Crane. Surely he impressed, profoundly, his day in the field and a high place as a valuable contributing pioneer is assured him.

I am conscious that my efforts to eulogize these three men of Michigan are feeble and insufficient. But I have assurance that the study of their lives as it is related to our work has afforded me interesting entertainment and pleasure and has been a source of mental and spiritual stimulation.

## TYPHOID FEVER IN DETROIT 1910-1933 INCLUSIVE

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Typhoid fever has become so infrequent in recent years that the matter of determining the source of infection often requires considerable skill. Table I indicates the number of cases and deaths from typhoid fever reported in Detroit since 1910.

The reasons for the gradual decrease in number of cases may be stated to be (a) the chlorination of water, beginning April, 1913; (b) the pasteurization of milk, May, 1915; (c) the protection of city water mains by removal of cross-connections with water supplies from polluted sources; (d) the extension of water carriage sewage disposal; (e) the extension of the use of city water in preference to the use of local wells; (f) the establishment of the filter plant, December, 1923; (g) the search for and the finding of typhoid carriers in recent years.

To say that a person develops typhoid fever after drinking water from a well or after eating food while on a picnic, is not acceptable unless it can be shown that other attendants have developed typhoid fever at about the same time. Sporadic cases of typhoid fever do not become infected in this manner. In determining the source of infection of a case reported in a particular municipality, one of the first things to determine is whether or not the patient does have typhoid fever or one of the allied paratyphoid fevers. When the diagnosis has been made, the date of onset can then be determined as accurately as possible. When this date is found, it is possible to state that the patient became infected in about ten to twenty-one days prior to the date of onset. If during that period the patient has been on a journey, it will be necessary to find out if he has been associated with a case of typhoid fever or has consumed food or

drink from an infected source. When such is the case, an effort is made to have the patient charged back to the municipality

TABLE I

Year	Cases	Case Rate Per 1,000 Population	Deaths	Death Rate Per 100,000 Population
1910	583	1.25	91	10.5
1911	386	.7	79	14.3
1912	365	.64	93	16.4
1913	364	.59	146	24.
1914	470	.71	71	10.8
1915	410	.56	72	9.9
1916	393	.53	87	11.8
1917	471	.57	107	13.
1918	255	.28	67	7.4
1919	260	.28	49	5.3
1920	199	.19	52	5.1
1921	393	.42	55	5.8
1922	194	.2	50	5.3
1923	134	.13	42	4.
1924	132	.12	30	2.7
1925	148	.12	33	2.6
1926	129	.10	28	2.2
1927	93	.07	16	1.2
1928	69	.05	14	1.
1929	72	.05	13	.9
1930	68	.04	17	1.1
1931	115	.075	12	.8
1932	57	.04	9	.6
1933	48	.03	10	.7



TABLE II. TYPHOID FEVER CASES BY SOURCE OF INFECTION.  
DETROIT—1914 TO DATE

SOURCE	1914	1915	1916	1917	1918	1919	1920	1921	1922	1923	1924	1925	1926	1927	1928	1929	1930	1931	1932	1933
1. Outside	94	145	129	135	116	127	85	88	53	54	54	59	74	48	36	37	30	40	25	12
2. Questionable diagnosis	86	0	32	52	0	0	10	17	14	7	5	7	0	0	0	1	0	0	0	0
3. Milk	44	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4. River	22	26	15	85	37	32	7	56	20	5	4	4	3	2	3	2	4	9	3	3
5. Boats	37	23	10	13	5	0	3	1	0	0	0	0	0	0	0	2	0	0	0	0
6. Contacts	39	28	5	39	18	24	17	70	14	7	11	3	10	14	2	4	10	12	2	5
7. Others (unknown)	148	185	224	141	77	77	77	161	83	61	62	70	42	26	27	26	22	51	24	20
8. Oysters	0	3	3	0	0	0	0	0	0	0	6	5	0	0	0	0	0	0	0	0
9. Typhoid carriers	0	0	0	0	0	0	0	0	0	0	0	0	0	3	1	0	2	3	3	8
10. Other foods	0	0	0	0	0	0	0	0	10	0	0	0	0	0	0	0	0	0	0	0
11. Well water	0	0	4	6	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	470	410	422	471	255	260	199	393	194	134	132	148	129	93	69	72	68	115	57	48

TABLE III. TYPHOID FEVER CASES, THE SOURCES OF WHICH WERE  
NOT DETERMINED.

	1914	1915	1916	1917	1918	1919	1920	1921	1922	1923	1924	1925	1926	1927	1928	1929	1930	1931	1932	1933
Cases reported	470	410	422	471	255	260	199	393	194	134	132	148	129	93	69	72	68	115	57	48
Cases, source not determined	148	185	224	141	90	85	77	161	83	61	62	70	42	29	28	26	22	51	24	20
Per cent of cases, sources not determined	35	40.5	53	30	31	30	38.7	40.7	42.8	45.5	43.3	48	32.3	31	40.6	36	32.4	44	42	41.7

TABLE IV. TYPHOID FEVER CASES DERIVING INFECTION IN DETROIT

	1914	1915	1916	1917	1918	1919	1920	1921	1922	1923	1924	1925	1926	1927	1928	1929	1930	1931	1932	1933
Cases reported	470	410	422	471	255	260	199	393	194	134	132	148	129	93	69	72	68	115	57	48
Cases, source outside Detroit	94	145	129	135	116	127	85	88	53	54	54	59	74	48	36	37	30	40	25	12
Cases infected in Detroit	376	265	293	315	139	133	114	305	141	80	78	89	55	45	34	35	38	75	32	36

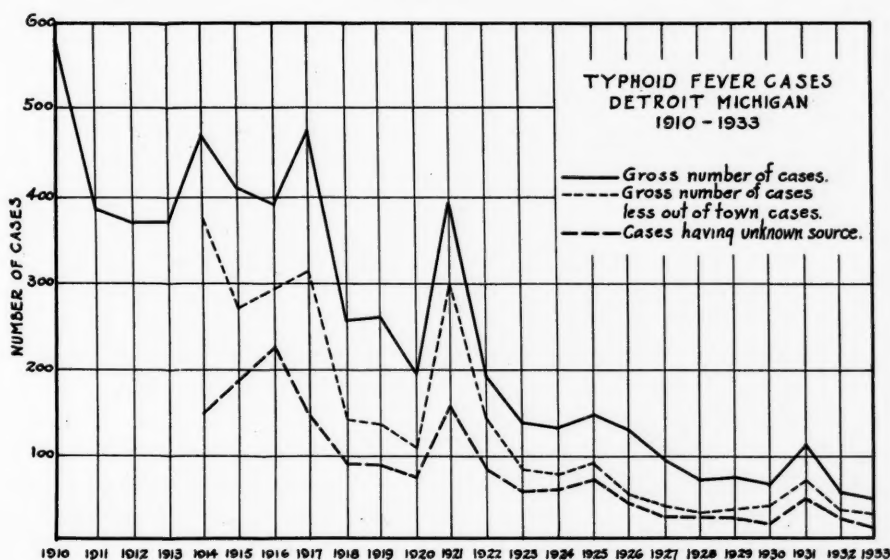


where the infection was obtained. Sometimes it happens that the patient becomes ill with typhoid fever before returning home, or perhaps becomes ill with typhoid fever

where the infection was obtained. Sometimes it happens that the patient becomes ill with typhoid fever before returning home, or perhaps becomes ill with typhoid fever

Table IV indicates the number of cases

CHART I



and is transferred to a hospital in another municipality where the diagnosis is made. Under all three of these conditions, the patient should not be charged against the municipality in which the case was first reported, but should be charged to the municipality where the infection was obtained.

Table II indicates the number of cases reported in Detroit by years since 1914 and it states the source of infection so far as it was possible to obtain it. From this table it will be apparent that milk has not been a source of infection since 1914. No cases of typhoid have been obtained from the boats on the lakes since 1921 except in 1929 when two employees became infected. Oysters have been a source of infection only in the years 1915, 1916, 1924, and 1925 and other foods have been incriminated only in the year 1922. Well water has not been known to carry infection since 1918.

From Table II it will also be noted that a considerable number of cases each year have been studied, but the source of infection has not been definitely determined. These cases are recorded in Table III. From this table it will be observed that in from 30 to 50 per cent of the cases reported each year it has not been possible to determine the exact source of infection. On account of this fact, it is not possible to pre-

pare a table which will indicate the exact number of cases whose source of infection was in Detroit. Table IV indicates the number of cases of typhoid fever deriving their infection in Detroit so far as it is known. Known sources of infection from outside of Detroit have been subtracted from the number reported in the city, leaving a residue which indicates the approximate number of cases infected in Detroit. It is possible that had the source of infection of the cases mentioned in Table III been determined, the source of some of them might have been found to be outside of Detroit. This would make the number of cases recorded in Table IV, as having been infected in Detroit, a much more accurate statement. This point is brought out more clearly in Chart I, where the gross number of cases is indicated by the whole line; the gross number of cases less the out-of-town cases by the dotted line; and the number of cases from unknown sources by the broken line.

It is clear that if one were sure that there were no sources outside the city in this latter group (those indicated by the broken line), one would be better satisfied with the numbers indicated by the dotted curve. However, from a study of this dotted curve it appears that the number of cases of typhoid fever reported in Detroit from 1914 to 1923 made a rapid decline from year to year. Since 1923 it is apparent that the major sources of infection have not been present so that the incidence each year has been low



TABLE V

Month	Residents of Detroit			Residents Outside of Detroit		
	Primary	Secondary	Deaths	Primary	Secondary	Deaths
January and February			No cases			
March	1			1		
April	4	1	2			
May	4	1		1		1
June	8		1			
July	10	1	1	1		
August	28	1	4	2	2	1
September	24	9	1	3		
October	3	3	1			
November	4					
December	3					
TOTAL	89	16	10	8	2	2

TABLE VI

PRIMARY			SECONDARY		
Typhoid carriers	Swimming in polluted water	Drinking infected water	Contacts in the home	Contacts in hospital	Total
3	6	3	9	3	24

and much more constant. By reference to Table II, it will be noted that typhoid carriers were first observed in 1927. It is probable that they have been present in decreasing numbers through the years, but the effort to detect them was not successful until 1927.

If we can disregard the cases of unknown sources it is apparent that through the years the greatest number of cases had their sources outside of Detroit; the next most important source is contact with known cases of typhoid fever. Now that the sanitary improvements of the city, including the care of the water supply and the milk supply, have been perfected, it is apparent that contacts with known cases is the greatest danger point. A later report by the Engineering Division will indicate the correlation between the decrease of typhoid fever in the city with (a) the increase in sewer connections, (b) increase in connections to the city water lines and discontinuance of wells, and (c) pasteurization of milk. This correlation is apparent, but a later report will present a careful study of the data. Since 1922, swimming in the Detroit River and in River Rouge and certain parts of Lake St.

Clair, while they have been sources of infection, have not been the important ones that they were prior to this date.

During the past few years considerable special effort has been made to determine the sources of infection. In 1931 the source of infection of 51 out of 115 cases could not be surely established. The probable sources of 13 of these cases were partially established.

Table V indicates the incidence of typhoid fever cases in Detroit by months during 1931, and it also indicates those who were resident outside of Detroit. From this table it is apparent that there were 115 cases reported in Detroit during 1931. Of these twelve patients died. It is also apparent that ten of the 115 patients were resident outside of Detroit and came into the city for treatment. Two of these non-resident patients died in Detroit.

The words primary and secondary should be defined. When a case of typhoid appears in a family, if after a suitable incubation period a contact develops typhoid fever, the former case is called a primary case and the latter a secondary. A contact to a known



case, who develops typhoid fever, is called a secondary.

Table VI indicates the source of infection in and about Detroit.

The typhoid carriers found were interesting. One was a cook, a woman 38 years of age, who had typhoid fever in 1911. She had worked for a number of important families in Detroit during the last fifteen years. There had been no cases of typhoid fever traced to her before the one observed in the family of her employer this year. Another carrier was a man, 46 years of age, employed as a night watchman. He had typhoid fever in 1915. His grandson developed typhoid fever this year. The third typhoid fever carrier is a woman, 35 years of age, who had typhoid fever in 1911. The patient was the sixteen months' old daughter of this carrier.

The six primary cases infected while swimming had been in the Detroit river off the Detroit shore, where the water is known to be polluted by the Detroit sewers. Some of these patients had been swimming in the River Rouge, which is also badly polluted. These patients had been swimming in these places about two weeks before their illness began.

Those who drank infected water, did so unwittingly. One drank water from a high pressure fire main which comes from the Detroit river. The water was left over after being sprayed at a fire. Some of the cases obtained water from a hose used to carry water from the river to cool iron castings at a foundry. These are good examples to illustrate what Detroit is saved from by the filtration plant and the chlorination of the water. Detroit city water is excellent for drinking purposes, but the raw water is dangerous.

The next group of Detroit cases received their infection by association with the first case in the family. It is dangerous to have a case in the home, as evidenced by the nine cases who developed the disease from other cases in the homes. Three cases developed in hospitals. They were nurses caring for cases of typhoid fever.

The next and larger group obtained their infection outside of Detroit. There were forty such cases. Of these eight returned home from vacations having symptoms of typhoid fever. Six more returned home and soon developed typhoid fever. They learned afterward that the places where they had

been swimming were known to be condemned. Twenty drank polluted water. The natives never drank the water from this source, they used other sources. Then there were six who went to visit or help care for relatives who had typhoid fever in their home towns, and then developed the disease themselves.

The most important point brought out above is that eighteen cases obtained their infection in direct association with a case. It is safer not to visit a case of typhoid fever; wait until he has recovered. He will then enjoy a visit much better.

There were thirty-eight, or one-third of the cases, the source of which could not be determined. Included in this group are those who were boarding and had no relatives. Some of them died before detailed information could be obtained. The others were cases in which all forms of inquiries failed to reveal the source.

#### TYPHOID FEVER IN 1932

There were fifty-seven cases reported. Nine of these patients died. The source of infection was found in thirty-three, the probable source in eleven, and in thirteen the source could not be determined.

Of the thirty-three cases having a known source of infection, twenty-five were found to have been infected outside of Detroit. Of these outside sources three were infected while traveling, seven while swimming in infected waters, twelve through drinking water from polluted sources, and three were contacts with cases of typhoid fever in their homes. There were eight patients who received their infection while in Detroit, three from typhoid carriers, three from swimming in infected water, and two were contacts with cases of typhoid fever in their homes. One typhoid carrier was found during the year. Thirty-six of the thirty-seven patients were hospitalized.

#### TYPHOID FEVER IN 1933

There were forty-eight cases of typhoid fever in Detroit during 1933. Ten of these patients died. The source of infection was found in twenty-eight, the probable source in one, and in nineteen instances it was not possible to find a source.

Of the twenty-eight known sources of infection, twelve were found to be outside of Detroit, seven were infected while travel-



ing, three while swimming in infected waters, and two from drinking polluted water.

There were sixteen whose source of infection was found to be in Detroit. Eight were infected by typhoid carriers, one while swimming in infected water, and two from drinking polluted water. Five received their infection from contact with a case in the home. During the year six typhoid carriers were found. Thirty-four of the forty-eight cases were hospitalized.

During the year 1933 a special rule was adopted by the State Department of Health by which it is possible to reallocate cases of typhoid fever to the municipality from which they received their infection. This regulation reads as follows:

1. If the source of infection is indeterminable the case is allocated to the reporting jurisdiction, or, if the case is reported by more than one health officer, then to the jurisdiction which seems the more likely place of infection in the opinion of the Bureau of Communicable Diseases.
2. A case is reallocated to another jurisdiction provided that:
  - a. The case was in that jurisdiction for all or most of the period from seven to twenty-one days previous to the onset, and that other epidemiological evidence is insufficient to warrant any other allocation; or
  - b. The case has been traced to a source or mode in that jurisdiction; or
  - c. The case is presumably an outbreak case in that jurisdiction, whether or not the source and/or mode are determined."

#### OUR DUTY TO THE PUBLIC

"What should be our attitude, for the public welfare and for our own sakes, with regard to irregular practitioners?" asks the editor of the *Pennsylvania Medical Journal*. "Undoubtedly the solution lies in the legislation restricting the practice of medicine to those properly qualified and such laws as are for the benefit of the public it is right to urge upon that public even though it be not wise enough to commend us. Were there no legislation restricting the milk supply, the people at large would be content to take any filthy stuff the milkman might bring, but, by putting before their more intelligent representatives the need of a pure milk supply, we virtually protect the people from themselves. If it be asserted that people have an inalienable right to use dirty milk if they so prefer and that our laws interfere with this privilege, still they do not possess such right in regard to the milk they shall give their children and it is clearly the duty of the law to guard the helpless from harm. It seems to us that this matter as well as many others of public hygiene in which the public is protected from itself and the helpless from the ignorant is paralleled by that of irregular practice. If we can teach legislatures that medicine should be practiced only by those qualified

On account of the above rule it was possible for the Detroit Department of Health to have fourteen patients reallocated from Detroit. It is felt that the above regulation of the State Department of Health is a very forward looking provision because it focuses attention upon the location where sources of infection have manifested themselves, and may be looked upon as possible sources in the future. This will stimulate local health authorities to correct the condition which makes possible the spread of typhoid fever in their municipality.

#### SUMMARY

1. A record has been given of the incidence of typhoid fever in Detroit from 1910 to 1933, inclusive.
2. It has been pointed out that the decrease in incidence has been due to improvements in the water supply, pasteurization of milk, extension of the sewer system, extension of the city water mains, the elimination of cross connections, the search for typhoid carriers, and the educational work regarding possible sources of infection when out of the city.
3. Intensive study of the source of infection of each case has been fruitful in pointing out important sources of infection.

by proper education, the question is at once solved. If a cultist desires to practice healing let him first study medicine, pass a State Board, then he may practice legally whatever system of the healing art seems to his clarified judgment the most efficient. That he might be guilty of devious methods is true but so might be, and occasionally are, physicians who yet have been regularly admitted to practice and cannot be debarred therefrom. But what such laws would do is to protect from the ignoramus, who with no knowledge of premises sets himself up to cure disease in some new fashion, not only the adult public, who perhaps should be allowed to attempt the descensus Avernus in its own way, but the helpless children who have now to be sacrificed to whatever fad is uppermost in their parents' unbalanced minds. To educate the public and especially the lawmakers against such practitioners is not only our right but our duty; but it must be done sanely and with moderation, for even so our only reward will often be an accusation of professional jealousy. Misunderstanding should not deter us; the health of the people in many ways depends upon what physicians have done and are doing in the face of the bitterest opposition; and the measures that they have caused to be enacted and enforced have led to anything but selfish benefit."



## HYPOTHYROIDISM AND CHOLELITHIASIS

CLIFFORD B. LORANGER, M.D.†  
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Search of the medical literature for the last several years has failed to reveal more than casual reference to a definite relation which, I believe, exists between some cases of cholelithiasis and hypothyroidism. In 1900 Hertough (quoted from Buttner) pointed out a possible relation; and Buttner describes a case which seems to bear out this theory. Rowe says that liver and gall bladder disease is from three to five times as common in thyroid as in pituitary disease and more than two times as common as in a typical group of non-endocrin complaints.

It is of more than passing interest that nearly all gallstones contain cholesterol; some indeed are composed almost entirely of this substance. Robinson says that the average cholesterol value is raised in the blood in cholelithiasis and Foweather and Collinson report that these high values return to normal after cholecystectomy.

Cholesterol is a monatomic alcohol with a condensed formula of  $C_{27}H_{43}OH$  and is structurally related to the bile acids. It is not easily soluble except in the presence of these acids. In the blood it forms a weak molecular union with saponaceous substances and glucosides which have a hemolytic action and so protects the red blood cells. In the cells it checks lipolytic action of some enzymes, conserving protoplasmic lipins. It also aids the cells to absorb more water without losing their semisolid state (Mathews). Cholesterol is distributed throughout the body both in the free state and as ester cholesterol.

It is probable that gall stones are not caused by any single condition or bodily state, but that many synergetic factors enter into their formation. Locally, infection and stasis, and constitutionally, metabolic disorders as pregnancy, obesity and endocrinopathies, cover the major etiology.

That infection is not the "sine qua non" of gallstone formation is well known to surgeons and pathologists, for both have seen the smooth, glistening, grossly normal bladder which, nevertheless, contains numerous faceted stones. When the mucosa of this type of gallbladder is examined, it often presents a striking appearance; the surface is

dark red in color with characteristic yellow dots, like a strawberry, from which it gets the name "strawberry gallbladder." Boyd speaks of gallbladders in this condition as "lipoid gallbladders." Others have written on this subject but his work represents the first detailed study of this type of cholelithiasis. In 1909, Monahan first called attention to this type of disturbance and Lichtwitz and Illingworth have made important contributions. Elman and Graham in 1931 reported their dog experiments. The latter two authors contradict the claim of the others that the gallbladder absorbs cholesterol and have shown that in dogs the gallbladder wall actually excretes this substance.

In the production of stones, without infection, the following changes should be considered. First, an increase in the amount of cholesterol in relation to the bile acids. This may be due to an increased hepatic elimination with an abnormal differential rate of absorption of the component parts of the bile, as Ashoff maintains; or it may be due to increased excretion of cholesterol by the gallbladder mucosa (Elman and Graham). Second, the supersaturated bile precipitates the cholesterol upon detached fragments of mucosa, the villi of which had become loaded with cholesterol and pedunculated (Boyd). Stasis, delayed emptying or incomplete emptying of the gallbladder are important factors, since the longer the bile remains in the viscus the more marked or complete these changes can become. Prolonged stasis by itself, however, will not cause stones (Goff, Hrdina and Andrews—University of Chicago).

Hypercholesterolemia is found in states other than hypothyroidism and it is interesting to see what various authors have noted in these conditions. In diabetes, the cholesterol value of the blood is raised and gall-

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stones are common, according to Aub. Overeating or fasting with restriction of fluids may induce gallstones is a conclusion of L. A. Whittaker. In nephrosis there is often a marked hypercholesterolemia but there are no reports of an increased incidence of gallstones in these cases. This may be due to the absence of any disturbance in the tone or motility of the gallbladder. Pregnancy is often accompanied by an increase of blood cholesterol, due to an increase of female sex hormone or often to a thyroid insufficiency. The altered mechanical condition of the abdomen from the enlarged uterus disturbs the function of the gallbladder. Gallstones are common (Fowweather and Collinson). In a review of their cases the Mayo Clinic reports that a significant number of their women patients date the onset of their cholelithiasis to a certain pregnancy.

Races subject to gallstones have more cholesterol in their diet than others, according to Dr. Langer (quoted from H. G. Wells). Peterson, in the *Archives of Pathology*, comes to the defense of the aphorism that gallstones are found most often in the broad type of person with an obtuse subcostal angle. He says that hypercholesterolemia is found in the "heavy type," having the general biologic status of diminished tissue permeability, lower metabolic rate, more sluggish inflammatory reactions of the presumably hypothyroid, hyperpituitary and hyperadrenal groups.

In hypothyroidism the concomitant hypercholesterolemia has been noted by many authors. This does not bear a direct relation to the basal metabolic rate but is found in all profound cases, as in myxedema. Dr. Frank Lahey is of the opinion that thyroid medication does the most good in those patients in whom this change is most marked (over 200 mg.). Dr. T. R. Brown in studying hypothyroidism and its effect on gastrointestinal function says, patients with a B. M. R. of —20 or lower have a marked tendency to intractable constipation, low gastric acidity and delayed intestinal conduction or conveyance.

Onizawa in Tokio, from his experimental work, reports that thyroid depletion causes an increase of ester cholesterol in most tissues and a decrease of free cholesterol, ex-

cept in the kidneys, liver and spleen, where the opposite effect is found. In the total blood and blood plasma both the free and ester cholesterol are increased. He concludes that thyroid acts in forming free cholesterol from the ester, probably in the liver.

Englebach, in discussing hypothyroidism in the adult, says that there is decreased reactivity of both the central and vegetative nervous systems; that there is a decreased exchange of fluids, crystalloids and colloids, and increased retention of water and proteins in the tissues; and that there is a decrease of tone and energy in the gastro-intestinal musculature. Furthermore, in writing on the adipose types of thyroidism and pituitarism, he says, "an additional lithiasis of these sacs (gallbladder and renal pelvis) occurs. Their operative removal does not prevent their recurrence, as has been shown in many cases. Preventive treatment, therefore, should go much farther, to the removal of the underlying biochemical cause, which might be corrected."

It is not to be wondered at that this relation has not been more frequently reported, when one considers how seldom is the diagnosis of hypothyroidism noted, especially in cases as spectacular as gallstones. Casting back in the mind we can all remember cases of gallstones which present, in retrospect, the clinical picture of hypothyroidism. This is especially true of women whose thyroid is so apt to become depleted during pregnancy and at the menopause, the time when gallstones so often occur.

In conclusion, there is a great need of studying the thyroid function in gallstone cases with an idea of preventing recurrence of the lithiasis by adequate control of hypothyroidism.

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# THE JOURNAL

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## EDITORIAL

### MUTUAL HEALTH SERVICE

The greater portion of this number of this JOURNAL is given over to the reports of the special committee on economics of the Michigan State Medical Society, the report of the special delegation to England last January and February and the deliberations of the special meeting of the House of Delegates, which assembled at Flint, April 12.† It is hoped these reports will be read and thoroughly digested by each member of the State Medical Society. The House of Delegates adopted the report of the Committee of Economics by a vote of 61 to 9, making the following recommendations:

(1) Approval for discussion of the plan with employers and employees. (2) Approval of an action to determine the legal status of the Mutual Health Service and the necessary action for the organization of Mutual Health Service. (3) Approval of the preparation of a final detailed plan of the Mutual Health Service for presentation to the House of Delegates for final action.

Health insurance, according to the report of Drs. Luce and Sinai, was favored almost universally by the medical profession in England and Scotland. The main objection was the association of insurance against illness with unemployment insurance. Taking a lesson from England's experience, the Committee on Economics has dealt only with the matter of health insurance which they have designated Mutual Health Service. Details of the plan are fully presented

†See supplement to this number.

in the report and the discussions. The fact is emphasized that the plan is tentative or experimental and that it will be voluntary to the counties adopting it by a majority vote of the members of the County Medical Society.

The Mutual Health plan is a sort of contract, the parties to which are the worker or wage earner, the employer and the medical profession. THE JOURNAL OF THE MICHIGAN STATE MEDICAL SOCIETY has from time to time dwelt upon what appears to be a fact; namely, that we are on the threshold of a new era in medicine as we are socially and industrially. What plan have we for the future? That question has been answered by the adoption of the aforementioned report. The new epoch is not of our making, nor is it due to any special desire on the part of anyone. We are confronted by a situation, and with the lesson of other states or countries before us we anticipate the future and are doing our best to avoid meeting it unprepared.

Even with the adoption of the recommendations of the Committee on Economics we have only a beginning. There will be obstacles to overcome. Explanation and publicity will be necessary. In the process of the initial experiment changes doubtless will be called for to meet unforeseen situations. However, the members of the medical profession cannot be charged with the accusation of having no definite plan to offer.

The problem is now up to them. No irrevocable action has been taken by the House of Delegates.

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### THE BEAUMONT LECTURE

The thirteenth annual Beaumont Lectures before the Wayne County Medical Society, which are appearing in the April and May issues of this JOURNAL, made a profound impression upon most of those who attended. Of equal or more importance to the medical man than the horizons opened by the new material of the lectures were certain implications which could be drawn from Professor Fulton's talks.

To most physicians, the cerebral cortex has been a portion of the brain surface which has been marked into areas associated with definite sensory, motor and associative functions and into a still larger "unknown" area. Since physiology has



been slow in unraveling the mysteries of "unknown" areas, there has been some tendency to look upon the areas as "unknowable." Although the work of Professor Fulton on frontal lobe localization has dispelled this view, it has likewise shown how dependent physicians are upon professional physiologists. The scientific man presents his conclusions in monographs and textbooks, repositories which for the physician are the known and knowable until other conclusions are available. The grist for the scientist is nature; the source of physiological knowledge for the physician is the textbook, the monograph and the lecture.

Professor Fulton casually called attention in his talks to the value of the old and often forgotten observations which at the time of their recording could not have been correlated with the bulk of physiological knowledge. Frequently, such records when critically reviewed in the light of newer knowledge have been important contributions to physiology. In this sense, accurate case records and the observations of practicing physicians have been valuable to physiologists either in providing data to aid in generalizations or in presenting problems to be solved.

In much of his work, Professor Fulton combined certain techniques of the experimental psychologist with the standard physiological procedure. His records were made through motion pictures to allow comparison of the behavior of his experimental animals. How much more delicate is such a method than the ordinary kymograph records of physiology. It is by such adaptation of method to the problem investigated that physiology is advanced. The insight into experimental method which the lectures presented was a glimpse into the nature of science.

Finally, it may be pointed out that for a long time the frontal cortex has been known to be subdivided into areas of differing histological structure. In determining the function of the frontal area, the physiologist is correlating function with form. Where the structure of the cortex varies, a different type of function may be expected. The broad biological background which correlates anatomy and physiology in attaining a viewpoint of the organism was evident in Professor Fulton's presentation.

Thus, we see that, in addition to show-

ing that the frontal lobe is subdivided into areas associated with the autonomic control of intestinal, vasomotor and thermal response, with the physiology of individuated and coördinated movement and with the physiology of memory, Professor Fulton has given an insight into the methods and viewpoint of physiological research.

### WORK AS A THERAPEUTIC MEASURE

There is an organization in England which goes under the somewhat cumbersome name, Save the Children International Union. Under the auspices of this society a pamphlet has been issued which presents conclusions of an investigation of the results of unemployment on young persons. Information was supplied from fourteen different countries. An immense number of boys and girls, we are reminded, come of age without ever having had any opportunity for work. In thousands of instances the young unemployed gradually manage to exist on one meal a day. The result is mental deterioration as manifest in apathy, carelessness in personal cleanliness and health; the majority become apathetic and listless. Those with most vitality and energy the minority, go to swell the ranks of radicals in open revolt against society.

Unemployment has the effect upon the young as a sentence of imprisonment, in as much as it condemns them to inactivity at a time of life when all physical and mental energies clamor for outlet. The seriousness of the situation manifests itself when we consider that unemployment of the young after they leave school means the elimination of that constructive force which should be each generation's contribution to human society.

The report further says that the attempt to attract the older boys and girls to study centers has not been successful on account of the apathy and indifference which prevails. It concludes:

"Labor service seems to be the only reasonable and feasible measure, and several contributors of our inquiry insist on the superiority of voluntary to compulsory service.

"The conclusions we are inclined to draw from the varied data is that much depends on the moment at which rescue work begins. Labor service schemes are mostly established for youngsters of an age when they are likely to become a social menace as beggars or vagabonds and when their demoralization under protracted spells of inactivity is almost complete. Were it possible to extend voluntary



labor service to school-leavers, so as to reach them before the work of deterioration begins, their acquiescence could be easily obtained and the system would not only prevent them from going under but give them a real education in citizenship.

"Whilst families may be helped with doles, allocations, school service, and other forms of relief, for the adolescent and young person there is but one means of assistance—work. Doles cannot arrest their gradual decline."

No nation is free from the menace of unemployment. We have it in the United States; in fact in every city, town and village in our own state. Before the urbanization of our population, the routine work of farm life absorbed the surplus energies of young men and women, when there was no unemployment problem, as most of us who have passed the half century mark well know. Not only are the young in our larger industrial cities suffering, but the tendency on the part of industry to discard thousands who are in the prime of life, but who have passed a certain arbitrary age limit, is producing a certain mental deterioration in a class who are still expected to bear all the responsibilities of citizenship.

Robert Burns, the poet, sensed the labor condition nearly a century ago:

"See yonder poor, o'er labored wight,  
So abject, mean, and vile,  
Who begs a brother of the earth  
To give him leave to toil;  
And see his lordly fellow worm  
The poor petition spurn,  
Unmindful though a weeping wife  
And helpless offspring mourn.

If I'm designed your lordship's slave—  
By nature's law designed—  
Why was an independent wish  
E'er planted in my mind?  
If not, why am I subject to  
His cruelty and scorn?  
Or why has man the will and power  
To make his fellow mourn?"

What to the present time has been a social problem is fast becoming a medical problem, particularly one for the psychiatrist.

#### POST-GRADUATE OPPORTUNITIES

The necessity for post-graduate work in medicine and surgery and allied specialties is greater today than in the past because more is expected of the physician. To meet this need the Post-Graduate Department in Medicine and Surgery of the University of Michigan, with the Michigan State Medical Society, has devised courses of the most practical nature. Each year more and more members of the society have availed themselves of the opportunity for self-improvement.

Efforts have been made to provide short intensive courses on various subjects. The brevity of these courses makes it possible for physicians to attend with very little interruption of the routine of their practice. The instructors present the established facts and methods in diagnosis and therapeutics in succinct form. A good example of such program was printed in the April number of the JOURNAL OF THE MICHIGAN STATE MEDICAL SOCIETY in which four days of concentrated instruction were given at the University on Ophthalmology and Otolaryngology, the courses continuing from 9 a. m. to 8 p. m. What an opportunity for those interested in these subjects, even for the specialist to meet and discuss problems of his specialty! Approximately seven hundred members of the profession each year take advantage of these and similar courses. This, however, is not enough. The number includes less than twenty per cent of the physicians registered in the State. True, the past four years, the economic problem has been most acute and there has been a disposition for members of the medical profession to keep pretty close to their offices and their practice. However, there is a limit beyond which it is not to the advantage of physicians to do this. They cannot perform their duty to their patients if they do not keep abreast with the advances made in the medical knowledge.

Programs of post-graduate instruction appear in this JOURNAL from time to time; the wise physician or surgeon will so arrange his work that he may take advantage of these courses.

#### HUMAN DISSECTIONS\*

Although human dissection had been performed during the time of Herophilus and Erasistratus in Alexandria, the story of cadavers and their dissection dates more correctly from the thirteenth century. When Italian physicians began to supplement their textbooks and animal dissections with occasional glimpses into the human body, the value of anatomy began to be appreciated. The importance of anatomy for medical students was recognized at Salernum as early as 1240 in an order of Frederick II requiring

\*This historical editorial is one of the series appearing in this JOURNAL on the general subject of the evolution of methods and devices that have aided in the growth of Medicine and Surgery.



ing that medical men must have learned the anatomy of the human body at the medical school before performing surgical operations.

The earliest record pertaining specifically to human dissection concerned a legal autopsy made by the Bolognese surgeon, William of Saliceto, before 1280, to detect whether or not a man had been poisoned. A Lombard physician is also reported to have made autopsies of persons who had died of pestilence in 1286. During the later thirteenth and early fourteenth centuries, occasional dissections were made, and it was at this time that the anatomies of Mondino, de Mondeville and da Varignano were written. Annual dissections were scheduled in 1340 for the physicians and surgeons of Montpellier, and, within a few decades, dissections were made at Venice, Lerida, Vienna and Paris. The city of Bologna after 1442 granted to the university a male and female cadaver for annual dissection. Sometimes, the apathy of the authorities who provided the material interfered with the dissection schedule, and frequently teachers and physicians were forced to insist upon their rights lest the custom die out. Such petitioning of authority was required at Montpellier in 1376, 1377 and 1396, as well as in the following century. The difficulty of obtaining material is attested by the record of a trial in Bologna in 1319 of four masters who were accused of removing the body of an executed criminal from its grave.

During the early period of dissection, when preservation was unknown beyond the external application of incense and sweet-smelling oils, the rapid decomposition of a body in the warm Italian climate necessitated a hurried dissection. Not more than four days could be allowed, and the order of dissection (abdomen, thorax, head and extremities) was determined by the order of decomposition of the parts. The rarity of dissection and the paucity of material, together with the current pedagogical practice of teaching from ancient, medical books, tended to make a dissection an occasion for the display of erudition, rather than for investigation. The professor read his textbook to an aggregate of physicians and students, while an assistant outlined the incisions and dissection procedure for a servant, who actually handled the body. Occasional preparations were made by drying the

parts in the sun or after long maceration in water. Bones might be cleaned by boiling or burial.

Essentially the same procedures obtained until the latter part of the fifteenth century when the renaissance artists invaded the demonstration room and charnel house in their search for more accurate information on the muscles and shapes of the human body. These men, less affected by the traditions of ancient anatomy than were the physicians, frequently dissected for themselves. Dürer, Michelangelo and Leonardo followed this practice.

By the middle of the sixteenth century, professional anatomists, such as Vesalius, Fabricius and Columbus, broke from tradition and began to dissect cadavers themselves. When it became evident that much might be learned from dissection, the importance of cadavers increased, but popular prejudice opposed the dismemberment of the dead so strenuously that cadavers were as difficult to procure as formerly. Vesalius, in order to secure sufficient material, had to rob the gallows; Rondelet even dissected his dead son. Dissection material was so scarce at Frankfort-am-Main that dissections were performed during but eight years out of the whole seventeenth century. Cortessi of Messina obtained only two criminal cadavers in twenty-four years. Rolfink at Jena was able to make annual dissections (after 1629) only by robbing graves. In twenty-four years, Hoffman, for a time an important opponent of Harvey, was able to dissect only twenty bodies. During the twenty years preceding 1712 in Prague, only three dissections were made. Cadavers were hard to obtain at Leyden, Tübingen and Vienna, and even the most outstanding anatomists studied and taught from miserable and inadequate material. A dearth of dissecting material was the natural consequence of the stigma attached to criminal cadavers which were generally considered as little more than carrion. Despite the despicable character of the cadaver which aroused general prejudice and affected the availability of material, there was no lack of interest when a body was scheduled for dissection.

During the seventeenth, and in fact into the eighteenth, century, demonstrations were attended by civic dignitaries and the nobility, as well as by physicians and students. Frequently, the demonstrations assumed the characteristics of a festival, in



which the dissection was a ceremony, accompanied by ritual, entertainment and even music. It was during this same period that dissecting chambers began to be outfitted with skeletons, stuffed animals and dried anatomical preparations which later were to lead to the anatomical museum.

As critical dissections were more intensely pursued, new dissecting techniques appeared. The injection of tubular organs, blood vessels and lymphatics with colored fluids to determine the continuity of tubular systems became a common procedure. When mixtures of colored waxes were passed into the vessels, it was noticed that bodies did not putrefy as readily as when untreated. In 1666, at the behest of the Dutch government, the anatomist Ruysch injected the body of the English admiral, Berkeley, who had been killed in action, in order that the body might be interred at home. Johannes Jacob Rau (1668-1719) of Leyden injected bodies in his laboratory to keep them from putrefying. Monro and Cassebohm standardized injection methods by injecting a thin colored turpentine into the vessels followed by a waxy medium. This method, crude as it was, persisted in the anatomical schools for a hundred years. The injections did not actually prevent putrefaction, but rather delayed it, and thus the dissecting rooms were characterized by the reeking stench of decomposing bodies. The septic condition of anatomical rooms was frequently reflected in the health of anatomists. Adrianus Spigelius of Padua, who died in 1625, was the first outstanding anatomist to die from a dissecting injury, and four anatomists who died of a putrid miasma are referred to by Jesse Foot, John Hunter's biographer.

Conditions at the beginning of the nineteenth century are described in Tuson's dissecting manual, according to which the dissection was carried on in a fireless room with windows open to the winter cold. The student was advised to dress warmly and to watch his diet in order to avoid the possible effects of bad air. "The food should be nutritious and generous, and it is proper to take a small quantity of wine, at a time when the body and mind is debilitated by long sitting at lectures and dissections; but avoid all excess of fluids and solids. Temperance is strictly necessary." The student was further advised to avoid wounds or pricks, and to suck the injured part if the

skin were abraided. Horner's *Dissector* noted that when the parts were exposed, they either dried or putrefied rapidly so that it was unwise to skin more of the body than was necessary to expose the parts studied. This applied to bodies injected with the colored wax method which had been used since the time of Ruysch. Although arsenic, alcohol, corrosive sublimate and alum were known to anatomists, these substances on the whole were used only in the museum, rather than in the dissecting room. Sometimes, mixtures of salt, potassium nitrate, sodium carbonate, molasses, starch and water, which would preserve the body for as long as two months in winter, when injected into the arteries, were used. Ganel in France by the use of alum, arsenic, creosote and numerous other substances perfected embalming methods so that the practice of embalming became more widespread. After the demonstration of the bacterial nature of putrefaction, antiseptics were added to the embalming fluids. The addition of glycerine or hygroscopic salts to the embalming fluids obviated the necessity of storing the embalmed bodies in solutions of brine or preserving fluids. The introduction of formaldehyde solutions by J. and F. Blum in 1893 was an outstanding contribution to the preservation of bodies, and, at present, the combination of formaldehyde with antiseptics, such as phenol, is probably the most common method of preservation. Although bodies are now rendered antiseptic and not likely to putrefy, the treatment is still not ideal, since it destroys the natural color of structures and hardens them.

Until the innovation at Berlin and Strassburg early in the eighteenth century of student dissection, the demonstration method was the recognized plan for teaching anatomy. This was the method of William Hunter, of the first Monro and of Albinus in Europe; of Cadwallader, of Bard and of Middleton in America. Often, the same specimens preserved in spirits or dried were shown to a score of classes. Toward the close of the eighteenth century, the competition among the private schools and universities led to the widespread establishment of student dissection, and the anatomist who could not furnish his students with a well supplied table suffered loss of students as well as loss of reputation. Under such a system, the bodies of executed criminals were inadequate. This fact, coupled with



the inconvenience of applying for them, resulted in the widespread development of irregular methods. Grave-robbing had been practiced since the renaissance period, but only in a desultory fashion. By the last decades of the eighteenth century, a somewhat enlightened authority in Germany, Austria and France provided sufficient dissecting material, but in the British Isles and America there was no such provision.

The practice of body-snatching, though providing material, had many undesirable features, particularly after professional grave-robbers arose in the field. As early as 1721 and 1722, the College of Surgeons expressed its disapproval of this practice. Public opinion bitterly condemned the desecration of graves, and, even among criminals, the prospect of dissection was more dreaded than that of death on the gallows. In Edinburgh and in London, demonstrators in anatomy, medical students and professional body-snatchers provided bodies for the schools. The actual stealing of a dead body was not larceny, because a corpse is not property according to English law; therefore, body-snatching, except for the trespass on cemetery property and the stealing of property within the grave, was only a misdemeanor. So common was the practice of grave-robbing that it was often the custom for towns to hire guards to watch the cemeteries during the night. The disapproval of grave-robbery expressed itself in the Glasgow Riot of 1813 which resulted in the jailing of the anatomy professor and his assistants, who, however, were later acquitted. The increase in the number of medical students and the difficulties of obtaining an adequate supply of dissecting material caused an increased demand for bodies, so that the professional body-snatcher or resurrectionist became a regrettable, but essential, adjunct to anatomical study. These were frequently despised characters to whom betrayal or blackmail was not unusual. Occasionally, bodies were even stolen from one dissecting room to be resold at a neighboring medical school. As the demand increased, the price of bodies rose from a few dollars to as much as a hundred dollars. Cadavers were frequently shipped into England or Scotland from neighboring countries, especially Ireland, a practice which precipitated scandal when rotting corpses failed to reach their destination. Dr. MacCartney of Trinity Col-

lege tried to induce certain of his friends to will their bodies in lieu of burial with a view of decreasing the necessity for body-snatching. Although this scheme had little support, some few, including the political philosopher, Jeremy Bentham, became anatomical subjects. In 1828, the police of London estimated that there were a hundred professional resurrectionists at work in the city. A rather extensive literature on the activities of these men, as well as students who indulged in the practice, is available to those enjoying gruesome, but exciting, literature, Dickens, Stevenson, Scott, De Quincey, Southey and Mark Twain, among others, have left writings which voice the prevailing opinions of their times. The poem by Thomas Hood, in which the spirit of a dead girl talks to her lover, is typical:

I thought the last of all my cares  
Would end with my last minute;  
But though I went to my long home,  
I didn't long stay in it.

The body-snatchers they have come,  
And made a snatch at me;  
It's very hard them kind of men  
Won't let a body be!

You thought that I was buried deep,  
Quite decent like and chary,  
But from her grave in Mary-bone,  
They've come and boned your Mary.

The objections of the public to body-snatching and the statements of unwillingly involved anatomists during the early part of the nineteenth century were supplemented by articles in the *Lancet* demanding legal sources of dissecting material. It was not, however, until public opinion was excited by the Burke and Hare atrocities at Edinburgh that legislative authorities were moved to action. The trial of Burke and Hare, in 1828, revealed that sixteen persons had been lured to the rooms of these men, intoxicated, and then suffocated. The bodies of the victims had then been sold for dissecting purposes, principally to Robert Knox, who at that time had the largest anatomy classes in Europe, numbering over five hundred. Public feeling was so outraged in Edinburgh that mobs collected and burned the dissecting room of Robert Knox to the ground. Within a few months, a bill was introduced in the House of Commons empowering the overseers of the poor to give up bodies to the medical schools, if no relatives could be found to pay burial expenses. Believing that such a bill dis-



criminated against the poor, the House of Lords vetoed the measure, and it was not until other murders occurred in London in 1831 that Parliament passed the Warburton Act (August 1, 1832), which gave anatomists authority to receive and dissect bodies upon application to the Secretary of State.

In America, where the anatomical teaching was closely patterned after the English and Scotch systems, grave-robbing was practiced by medical students and young doctors, although, as in England, occasional executed criminals were given to the medical schools. Public sentiment against body-snatching in New York became so aroused in 1788 that the Doctors' Riot was precipitated. Several persons were killed in the mob which surrounded the jail where the doctors had taken refuge. At Baltimore, in the same year, the body of a criminal, intended for dissection, was taken from the doctors by an inflamed mob. In 1789, the New York legislature passed an act punishing grave-robbing and the dissection of material knowingly so obtained. The act further added dissection to the death penalty in certain instances. Massachusetts since 1774, had punished duelling by death followed by dissection. The first true anatomical act in the country, however, appeared in Massachusetts in 1831 and permitted anatomists to use the bodies of deceased persons which would, otherwise, be buried at state expense. Within the next two decades, several states, a few of them only temporarily, passed similar anatomical acts. Fifty years after the enactment of the Massachusetts law, twenty-four states had passed acts of varying degrees of liberality, while fourteen still had no such laws. The earlier laws permitted dissection and provided legal means by which the anatomist could apply for material. A few years after the Civil War, several states, such as Michigan, New York, Pennsylvania and Ohio, had either passed new laws or amended old ones, making it mandatory that all bodies for which the state was responsible be sent to the medical schools. During the past fifty years, a number of other states have passed mandatory types of laws. The change in attitude from the earlier legislation in which anatomists were permitted to ask for bodies to a state in which all the bodies, not otherwise claimed, were given into the custody of the medical schools was a distinct advance. Such laws not only discouraged

grave-robbing and the evils arising from it, but also provided adequate material for the anatomist and gave him legal protection.

The history of dissection reveals an interesting fact. The main outlines of human anatomy were described from rare and unpreserved corpses before the time of Harvey; the details were gained during the seventeenth and eighteenth centuries from stolen bodies; while today, with an abundance of antiseptic and non-putrefying material, nothing remains for the practical anatomist but the study of minute details of human variation.

W. T. D.

#### EARLY RISING

"God bless the man who first invented sleep!"

So Sancho Panza said, and so say I:

And bless him also, that he didn't keep

His great discovery to himself; nor try

To make it—as the lucky fellow might—

A close monopoly by patent-right.

Yes—bless the man who first invented sleep

(I really can't avoid the iteration),

But blast the man, with curses loud and deep,

Whate'er the rascal's name, or age, or station,

Who first invented, and went around advising,

That artificial cut-off, early rising.

"Rise with the lark, and with the lark to bed,"

Observes some solemn, sentimental owl;

Maxims like these are very cheaply said;

But, ere you make yourself a fool or fowl,

Pray just inquire about his rise and fall,

And whether larks have any beds at all.

The time for honest folks to be a-bed

Is in the morning, if I reason right;

And he who cannot keep his precious head

Upon his pillow till it's fairly light,

And so enjoy his forty morning winks,

Is up to knavery—or else he drinks!

Thompson, who sung about the "seasons," said,

It was a glorious thing to rise in season;

But then he said it lying in his bed,

At ten o'clock A. M.—the very reason

He wrote so charmingly. The simple fact is,

His preaching wasn't sanctioned by his practise.

'Tis doubtless well to be sometimes awake,

Awake to duty, and awake to truth,

But when, alas! a nice review we take

Of our best deeds and days, we find, in sooth,

The hours that leave the slightest cause to weep

Are those we passed in childhood or asleep!

'Tis beautiful to leave the world awhile

For the soft visions of the gentle night;

And free, at last, from mortal care or guile.

To live as only in the angels' sight,

In sleep's sweet realm so cosily shut in,

Where, at the worst, we only dream of sin.

So let us sleep, and give the Maker praise.

I like the lad who, when his father thought

To clip his morning nap by hackneyed phrase

Of vagrant worm by early songster caught,

Cried, "Served him right! It's not at all surprising.

The worm was punished, sir, for early rising."

By JOHN G. SAXE (1816-1887).



## THE DOCTOR'S CONTRIBUTION

*(The Detroit News)*

Appreciation of the services of the medical profession grows. The doctor has had a big share in the advance of science that has lengthened the average life and made life for everybody more worth living.

Particularly in times of depression, the physician is a staunch defender. It is a fine credit to the medical profession that it has stood ready to serve and has placed the estimate of its responsibility to relieve suffering above the expectation of returns in fees.

How heavy has been the sacrifice made by the physicians of the country lately has been revealed through a survey conducted by the magazine, *Medical Economics*. Says an article in the current number: "As his contribution to charity, the average American doctor works one day out of every four for nothing. Furthermore, under present economic conditions, he is unable to collect for another quarter of his working hours. Thus half of the physician's time is devoted to free work, the grand total reaching more than \$1,000,000 a day."

Such information should stir the consciences of a great many people. Those who find themselves in better circumstances with the improvement of conditions, should take thought of their unpaid obligations. The doctor is worthy of his hire, and his huge burden of "involuntary charities" should be lightened.

## GROWING AULD GRACEFULLY

Gracefully growing a' over th' years,  
Way up tae th' three score an' ten;  
Up tae th' time when th' auld gray appears,  
An' somber auld dreams come tae men.

Don't let th' stress an' th' strife sae tae you  
That a' o' yer livin' is gone,  
Cling tae th' silver that's shinin' a' through  
Th' clouds o' distress i' th' dawn.

Don't be a grouch, it gets under th' skin  
O' neebors an' frien's wha come ben.  
Yer crabbet an' creak when hate enters in  
An' th' smile leaves th' soul o' men.

There's smiles up in Heav'n, th' earth's fu' o'  
smiles,  
There's oceans o' smiles on th' wend;  
Get awa frae yersel' an' live in thae smiles  
An' gracefully grow tae th' end.

WEELUM.

TREATMENT OF MYASTHENIA GRAVIS  
WITH GLYCINE AND EPHEDRINE

Boothby† states that, of twelve patients suffering from myasthenia gravis treated with ephedrine and glycine, ten have shown definite improvement, and four of these have shown marked improvement. Two did not respond to treatment except that the progress of the disease was apparently arrested; one of the two died from causes not directly attributable to the myasthenic syndrome. The author believes that by the careful use of either ephedrine or glycine, and more often of the two, the condition of most patients having myasthenia gravis can be improved sufficiently to permit them to return to work or at least to enjoy a useful life. Time alone will tell whether this improvement can be maintained. The disease occurs much more frequently than is generally supposed.

†Archives of Internal Medicine.

## SOCIETY ACTIVITY

BEWARE OF GROUP HOSPITAL  
INSURANCE PLANS

Considerable publicity has been given to the providing of hospital care under the so-called group insurance plan. Its adoption by communities has been sponsored and inspired by lay groups and at times by County Medical units.

Warning is given not because of the providing of hospital care but for the reason that following a period of successful operation, additional features will be demanded and incorporated. These features are those of professional services.

Many of the present medical problems had their inception in innocent proposals. There is abundance of evidence that, as time went by, medical service features were added, resulting in providing free medical care. While the group hospital plan states that it is to provide only hospital services, who can tell how soon the addition of professional services will be demanded? Once established under lay and hospital control with no or only a minority medical representation on the governing body, it would not be difficult to expand the benefits to include medical care and control to be vested in lay administration.

The plan of Mutual Health Services, published in this issue, provides for hospital, nursing, dental, and medical services. If Mutual Health Services is finally approved and the experiment inaugurated, the patient's hospital needs will be met. Pending this experiment, the warning is given to beware of group hospital plans and to not confuse the problem while our experiment is being made. We have sat by and seen too many innocent projects instituted that later developed into vicious movements, to our great regret. Do not permit group hospital care plans to become one more of these undesirable projects unless it is under absolute professional control.

## CHEAP EXAMINATIONS

Scarcely a month passes without the receipt of a half dozen letters from members complaining of fees fixed by insurance com-



panies and chain stores for services and physical examinations.

Certain insurance companies seem to insist on a three dollar fee for office examinations for life insurance. Chain stores fix a fee of one dollar for an employee's examination.

As long as doctors will make examinations for these low fees these companies will decline to pay more. The answer has been given by the St. Clair and Bay County Medical Societies in an official action declining to accept these cheap fees. If similar action is recorded by every county unit the problem will be solved.

#### POST-GRADUATE OPPORTUNITIES

In the April and this issue of THE JOURNAL announcements are made of post-graduate opportunities provided for members by the Department of Graduate Medicine of our University in coöperation with our State Society. Members are urged to embrace these provisions that are arranged for their benefit. Write to the Director of Department of Post-Graduate Medicine, University, for specific information.

#### MUTUAL HEALTH SERVICES

By action recorded in the special meeting of our House of Delegates held on April 12, 1934, the plan for Mutual Health Services proposed by our Committee on Economics was approved in principle. Its experimental application was authorized.

The minutes of that Special Session, the Committee's Report and the detailed outline of the plan are published in this issue. Every member should study this new proposal. It ushers in a new era in medicine in Michigan.

#### OUR POST-GRADUATE PROGRAM

*Dean Brett (University of Toronto)* . . . "Of course, he (the practitioner) has his literature, but from all I have heard it is a problem for him to keep abreast of this."

*Dean Edsall (Harvard Medical School)* . . . "I think the point you mention is probably the most important point with regard to medical education that we have before us. . . . When the practitioner gets cut loose from an educational center he finds difficulty in keeping reasonably in contact with the new developments. He cannot under present conditions keep pace with what is happening although he earnestly desires to do so." (Report Annual Meeting, Association of American Universities, 1932, p. 148.)

The products of research and invention have added greatly to the safety of our people

and made their lives more interesting and livable. Labor saving devices on farm and in factory; the radio, with both entertainment and education, and the automobile, widening the scope of interest and opportunity, all have been very important factors in our national life.

It is interesting to note that new commercial products—the results of research and invention in their respective fields—reach the consumer very speedily and directly while the products of research and invention in the field of medical science are not made available to any considerable number of our people for many years, and many remedies and procedures of real importance never become available to more than a favored few.

While inability to purchase medical service is in a considerable measure responsible, the most important factor is that the only medium between supply and demand in Medicine—the doctor—is handicapped in the delivery of service. This lag in medical service continues to present a problem baffling alike to both educator and doctor, and is one in which the public is deeply concerned.

The Michigan State Medical Society was among the first of the state societies to assume responsibility in this very important field of education. The consistency with which this program has gone forward forms an interesting chapter in the history of our Society.

The entrance of the University into this effort and the enlistment of support from the Detroit College of Medicine were at the request of the Society upon its realization that more prolonged and more academically arranged opportunities must become a part of the program.

The arrangement for the current year is by far our most attractive presentation. The subject matter has been carefully selected and we consider ourselves very fortunate in securing the services of our teaching group.

Aside from, or supplemental to, these courses, provision is made for those with special problems. The Director, or the Chairman of the Committee in Detroit, would be glad to consider your problem with you.

#### DUES

Unless you have paid your 1934 dues you are now in suspension and without medico-legal protection. See your County Secretary to secure reinstatement.



## ECONOMIC MOVEMENTS

The preventing of the institution of undesirable health services and plans will not be accomplished by merely declaiming against them. Earnest study and presentation of measures that are understandable by laymen is the only course that will defeat undesirable proposals.

We are being criticized by laymen and legislators because our attitude and action has, in the past and in the main, been characterized by condemnations and obstructive measures. We object but fail to advance a plan or plans that will be acceptable to the public and the profession. The public's conclusion is that we are incapable of presenting a solution to the demands of society. By inaction we have inspired laymen to attempt solution. These lay attempts are growing in number and in variety. These laymen or these lay controlled foundations will be successful in promoting plans unless organized medicine abandons its present attitude and devotes aggressive, intense efforts towards solving the problem by advancing an acceptable plan for Mutual Health Services.

We are proud of the fact that in Michigan the profession has taken the initiative and is on the eve of instituting a plan under the profession's control. The claim is not made that our plan is perfect or that it is the final answer. It is an experiment which we trust will aid us to formulate a satisfactory solution of the desires of society as to medical services.

Our members are urged to subscribe sympathetic support and aid in the experiment. Objectionable features may be uncovered—if so, our experiences will cause their correction because our medical representatives control and direct the experiment.

Unless we initiate this experiment and study we shall be practically defenseless in preventing the introduction of lay conceived and lay directed plans and operation. Our eventually perfected plan and its medically supervised control and operation will be our strongest defense in preventing the institution of undesirable proposals.

It has been repeatedly stated that medicine, represented by its organizational officers, should take the initiative and lead. Michigan's profession, through its State Medical Society, is now evidencing sound leadership.

#### UNIQUE BOOK-FINDING SERVICE LOCATES "HARD-TO-OBTAIN" VOLUMES IN WORLD-WIDE SYSTEM

Every person at one time or another is confronted with the problem of wanting a particular book that is no longer available through the regular publishing or bookstore channels. When a volume has reached that stage of scarcity, it is designated as "out-of-print" and commences to lead an elusive existence.

The American Library Service, New York City, organized thirteen years ago a world-wide system to track down and snare out-of-print books in any language and on any subject. They have been singularly successful in this field. This service also extends to back numbers of all magazines.

Whether the book is technical or historical, genealogical or literary, or just a school book through which a grown-up wants to recapture his youth by re-reading, the American Library service has built up a system adept at finding it.

The American Library Service also conducts special departments for the purchase of books, whether a single volume or a complete library, as well as autographs of literary or historical value. It also supplies current books of all publishers.

#### UNIVERSITY OF MICHIGAN MEDICAL SCHOOL

##### Intensive Post-Graduate Courses

Diseases of Metabolism, May 14-18, University Hospital, Ann Arbor.

\*Proctology, May 28-June 2, Receiving Hospital, Detroit.

\*Obstetrics, Gynecology and Gynecological Pathology, June 4-9, Receiving Hospital, Detroit.

Practitioners' Course, June 18-22, Receiving Hospital, Detroit.

Traumatic Emergency and Minor Surgery, June 25-29, Receiving Hospital, Detroit.

All dates inclusive.

Roentgenology, June 25-August 3, University Hospital, Ann Arbor.

#### DISEASES OF METABOLISM

University Hospital, Ann Arbor

May 14-18, 1934

Unless otherwise designated, class will meet in Medical Seminar Room, Simpson Memorial Institute

##### Monday, May 14

###### Morning

9:00-10:00 Registration. Room 2040, University Hospital.

10:00-12:00 Metabolic Mixture. Water Exchange. Inorganic Ion Exchange. Dr. Newburgh

###### Afternoon

2:00- 4:00 The Normal Diet. Miss MacKinnon

4:00- 5:00 Discussion.

##### Tuesday, May 15

###### Morning

9:00-10:00 Metabolism in Diabetes. Room 3410, University Hospital.

10:00-12:00 Principles of Dietetic Treatment. Dr. Newburgh

###### Afternoon

2:00- 4:00 Calculation of Diets. Miss MacKinnon

4:00- 5:00 Discussion.

##### Wednesday, May 16

###### Morning

9:00-12:00 Diabetic Clinic. Room G 106, University Hospital. Dr. Newburgh  
Miss MacKinnon

###### Afternoon

1:00- 2:00 Teaching of Patients. Room G 106, University Hospital.

2:00- 4:00 Preparation of Diabetic Diets. Room B 114, University Hospital. Miss MacKinnon  
Miss Cartmill

##### Thursday, May 17

###### Morning

9:00-10:00 Correlation of Various Classifications of Renal Disease. Dr. Lashmet

10:00-11:00 Normal Physiology and Abnormal Variations of Kidney Function. Dr. Lashmet

11:00-12:00 Nature of Edema. Dr. Lashmet

\*The programs in Proctology and in Obstetrics, Gynecology and Gynecological Pathology are not completed in time for publication, but will be available upon application by the time THE JOURNAL is delivered.



*Afternoon*

- 2:00- 4:00 Functional Tests in Renal Disease.  
Dr. Lashmet  
4:00- 5:00 Treatment of Renal Disease.  
Dr. Lashmet

**Friday, May 18***Morning*

- 9:00-12:00 Calcium Metabolism. Normal and Abnormal. Room 3410, University Hospital.  
Dr. Freyberg

*Afternoon*

- 2:00- 4:00 Preparation of Nephritic Diet.  
Miss Enke  
4:00- 5:00 Discussion.

**TEACHING STAFF**

- L. H. Newburgh, M.D., Professor of Clinical Investigation in Internal Medicine  
F. H. Lashmet, M.D., Assistant Professor of Internal Medicine  
R. H. Freyberg, M.D., Instructor in Internal Medicine  
Genevieve Cartmill, B.E., Instructor in Dietetics, Department of Internal Medicine; Dietitian, Metabolism Service  
Frances MacKinnon, A.B., Dietitian, Diet Therapy Clinic  
Gladys Enke, B.S., Dietitian, Ward Service

**PRACTITIONERS' COURSE**

Receiving and Herman Kiefer Hospitals  
Detroit, Michigan  
June 18-22, 1934

**Monday, June 18***Morning*

- 8:00 Registration. Receiving Hospital  
8:30 Symposium on Gastro-Intestinal Disease.  
Peptic Ulcer.  
a. Differential Diagnosis from Clinical Standpoint.  
b. Differential Diagnosis from X-ray and other Laboratory Standpoints.  
Dr. Hugo A. Freund  
Dr. Wm. A. Evans  
10:00 c. Medical Treatment.  
Dr. C. E. Vreeland  
11:00 Gastro-intestinal Neuroses. Dr. H. A. Reye

*Afternoon*

- 1:30 Complications of Peptic Ulcer and Indication for Surgical Treatment.  
Dr. F. G. Buesser  
2:30 Amebic Dysentery and Ulcerative Colitis. Diagnosis and Treatment.  
Dr. B. C. Lockwood  
4:00 Gross specimens. Gastro-intestinal Disease.  
Dr. O. A. Brines

**Tuesday, June 19***Morning*

- 8:00 Gall Bladder Disease. Clinical Picture. Differential Diagnosis. When to Operate.  
Dr. R. J. Schneck  
9:00 Agranulocytosis. Dr. Hugo A. Freund  
10:00 Ano-rectal Disease. Methods of Examination. Office Procedures. Clinic.  
Dr. L. J. Hirschman

*Afternoon*

- 1:30 Symposium on Heart Disease. Classification, History Taking, Signs and Symptoms of Heart Failure.  
Dr. Norman E. Clarke  
2:30 Pathologic Physiology.  
Dr. Douglas Donald  
3:30 X-ray and Electrocardiography in Heart Disease.  
Dr. Douglas Donald  
Dr. J. C. Kenning

**Wednesday, June 20***Morning*

- 8:00 Diabetes mellitus. Requirements for Diagnosis. The Pre-Diabetic State.  
Dr. Richard McKean  
9:00 Principles of Treatment.  
Dr. Richard McKean  
10:00 Laboratory Procedures. Preparation of Diets.  
Dr. Daniel P. Foster

*Afternoon*

- 1:30 Hypertensive and Arterial Sclerotic Heart Disease. Associated Conditions. Prognosis. Management.  
Dr. C. G. Jennings.  
2:30 Coronary Occlusion. Angina Pectoris.  
Dr. Robt. L. Novy  
3:30 Circulatory Problems in Relation to Obstetrics and Surgery. Dr. E. P. Spalding

**Thursday, June 21***Morning*

- 8:00 Treatment of Heart Disease.  
Dr. Robt. L. Novy  
9:00 Clinical Bedside Demonstration.  
Dr. W. B. Cooksey  
Dr. Douglas Donald  
Dr. Robt. L. Novy  
Dr. E. D. Spalding  
11:00 Nephritis. Dr. Alpheus Jennings

*Afternoon*

- 1:30 Problems in the Treatment of Diabetes. Case Demonstration. The Use of Insulin.  
Dr. Richard McKean  
3:00 Complications of Diabetes. The Disease in Middle Life and in Old Age.  
Dr. Daniel P. Foster

**Friday, June 22***Morning*

- Herman Kiefer Hospital  
Dr. Bruce Douglas and Staff  
8:00 Pulmonary Tuberculosis. Requirements for the Diagnosis.  
9:00 The X-ray in Diagnosis and in Determination of Activity of Foci.  
10:00 Tuberculosis in Children. The Tuberculin Test. Indication for Collapse Therapy.

*Afternoon*

- 1:30 Surgical Indications and Results in Pulmonary Tuberculosis. Dr. E. J. O'Brien  
2:30 Contagious Diseases. Dr. John E. Gordon

**TRAUMATIC EMERGENCY AND MINOR SURGERY**

Receiving and Herman Kiefer Hospitals  
Detroit, Michigan  
June 25-29, 1934

**Monday, June 25***Morning*

- 8:00 Registration. Receiving Hospital  
8:45 Immediate Care in Traumatic Injury, and Recognition and Treatment of Shock.  
Dr. Roy D. McClure  
10:00 Differential Diagnosis in Acute Abdominal Conditions. Indications for Exploration. Choice of Procedures. Operative Clinic. Dr. H. K. Shawan



*Afternoon*

- 1:30 Factors in Estimation of Surgical Risk.  
Dr. E. D. Spalding  
2:30 Pre-operative and Post-operative Care.  
Dr. L. J. Morand  
3:30 Injuries to the Eye.  
Dr. Don M. Campbell

**Tuesday, June 26***Morning*

- 8:00 Clinic. Plastic Surgery.  
Principles and Technic in Care of Skin  
Lesions and Injuries.  
Skin Grafting. Dr. C. L. Straith  
10:00 Clinic. Recognition and Treatment of  
Injuries to Kidney, Ureter and Bladder.  
Dr. H. W. Plaggemeyer

*Afternoon*

- 1:30 Clinic. Genito-Urinary Tract. Acute  
and Chronic Infections and Secondary  
Lesions. Dr. F. H. Cole  
3:00 Clinic. Peripheral Vascular Insuffi-  
ciency. Varicose Veins. Buerger's Dis-  
ease. Dr. E. A. Osius

**Wednesday, June 27***Morning*

- 8:00 Diagnosis of Cranial and Spinal Injuries.  
The Neurological Examination.  
Dr. H. A. Reye  
9:00 Traumatic Neuroses. Dr. H. A. Reye  
10:00 Demonstration of Cases.  
Dr. Frederic Schrieber  
Dr. E. S. Gurdjian  
Dr. J. C. Kenning

*Afternoon*

## Herman Kiefer Hospital

- 1:30 Surgery of Chest.  
Including Care of Accidental Injuries  
as well as the Newer Surgical Methods  
in Care of the Tuberculous.  
Dr. E. J. O'Brien

**Thursday, June 28***Morning*

- 8:00 Clinic. Major and Minor Injuries.  
Dr. W. J. Cassidy  
10:00 Office and Emergency Treatment of Ano-  
rectal Conditions. Dr. L. J. Hirschman

*Afternoon*

- 1:30 Infections of Hand. Indications and  
Technique for Drainage and other Sur-  
gical Intervention. Dr. C. S. Kennedy  
3:00 Burns. Recent American Medical As-  
sociation presentation, with use of Lan-  
tern Slides and Moving Pictures.  
Dr. Clyde I. Allen

**Friday, June 29***Morning*

- 8:00 Fractures. Dr. A. D. LaFerte  
Dr. F. C. Kidner  
11:00 Osteomyelitis. Dr. G. C. Penberthy

*Afternoon*

- 1:30 Injuries to the Newborn. Dr. David J. Levy  
2:30 Prevention and Repair of Injuries to  
Birth Canal. Dr. Ward F. Seeley

**ROENTGENOLOGY**

University Hospital, Ann Arbor  
June 25-August 3, 1934

Medical Roentgenology: Advanced Course. The first half of this course consists of an intensive systematic laboratory study of the physical principles of x-ray production, the mechanics of x-ray

apparatus, and the chemistry of photography. The second half will be devoted to instruction in film interpretation and fluoroscopic procedures.—Professor Fred F. Hodges and Staff.

For information address Department of Post-Graduate Medicine, University Hospital, Ann Arbor, Michigan.

**MICHIGAN STATE MEDICAL SOCIETY**

and  
DEPARTMENT OF POST-GRADUATE MEDI-  
CINE, UNIVERSITY OF MICHIGAN  
POST-GRADUATE CONFERENCE—FOUR-  
TEENTH COUNCILLOR DISTRICT

at  
Adrian—Masonic Auditorium  
Thursday, May 10, 1934

*Afternoon*

- 2:30 Prevention and Repair of Birth Injuries to  
the Mother—Dr. H. H. Cummings, Ann Ar-  
bor.  
3:30 Differential Diagnosis in Acute Abdominal  
Disease—Dr. Eugene Potter, Ann Arbor.  
4:30 Diagnosis and Treatment of Pneumonia—Dr.  
E. D. Spaulding, Detroit.  
6:30 Dinner.  
Address—The Recognition and Management  
of Speech Defects—Professor John R. Muys-  
kens, Ann Arbor.  
DR. H. H. CUMMINGS, Councillor.

**A. M. A. MEETING**

This will be held in Cleveland the week of June 10. To register and attend it is necessary to present your 1934 Fellowship Card.

**COUNTY SOCIETIES****DICKINSON-IRON COUNTY**

The Dickinson-Iron County Medical Society met on March 29, at 7 p. m., at the Milliman Hotel for a dinner meeting. The president, W. J. Kofmehl, presided, and the following members answered roll call: Drs. Haight, Kofmehl, Libby, Hayes, Hamlin, Fredling, Browning, Alexander, Crowell, Smith, Frederickson, Drury, Boyce, Walker, Huron and Menzies. It was voted to keep the annual dues of the society at \$12.00.

Dr. Clifford Menzies of the Ford Hospital, Iron Mountain, was elected a member.

We highly appreciated the following program: Dr. Moses Cooperstock of the Northern Children's Clinic speaking on "Asthma, An Allergic Disease," and Dr. Eugene Elzinga, orthopedic surgeon for the Michigan Crippled Children's Commission, speaking on "Acute Osteomyelitis."

CHARLES P. DRURY, Secretary.

**LIVINGSTON COUNTY**

Twelve members and seven guests including representatives of the Livingston County Dental Association met at the State Sanatorium on Friday evening, April 6, 1934, and enjoyed a fine chicken dinner.

The business session that followed included the reading and approval of the minutes of the March meeting. A preliminary report of the Committee on "Preventive Medicine" was mentioned by the secretary. He reported that the Committee had met as guests of Doctor Mellus at a dinner in Brighton on the evening of April 3. Commissioner Vaughn,



of the Health Department of Detroit, very kindly met with the Committee and discussed his plans in full, and the possibilities for Livingston County was a live subject of speculation. A detailed recommendation for public health and preventive medicine activities in our County Society will probably not be formulated before the fall months of this year.

The secretary reported his attendance at the annual conference of county secretaries. He also announced that a University Hospital Post-Graduate Extension Course for our Councilor District would be held at Adrian in the afternoon and evening of May 10.

The president, Doctor Leslie, urged the members of the Society to support the coming referendum on a State Bond issue because of its vital importance to the immediate welfare of the people of Michigan and because certain of the state institutions, including the Sanatorium at Howell, will profit by the building construction that they will receive if this Act is approved.

An informal discussion took place concerning the possible action of the House of Delegates at a special meeting to be held in Flint on April 12. While no details of the action to be taken there were available to the Society, it was felt that any precipitous action on the part of the House of Delegates in the field of medical insurance might conceivably be unfortunate at this time. While this was the sense of some members on this mute subject, it was felt that we were too much in the dark to instruct our delegate as to the proper action to take at Flint, should this subject come up for action, and that we would rely entirely upon the exercise of his good judgment in the matter.

Following the business session the Society was fortunate in hearing Dr. Charles L. Brown, Professor of Medicine at the University of Michigan, give a very clear and practical discourse on the subject of "Medical Diseases of the Kidney." Doctor Brown clarified many of our difficulties concerning the distinction between nephritis and nephrosis. He touched on the problem of treatment in some detail and referred to the use of neutral diets and alterations of the acid-base equilibrium in the elimination of edema. The importance of focal infection was stressed, and all in all it was a most practical talk on a very difficult subject and was widely appreciated by those fortunate to hear it.

R. S. ANDERSON, M.D., *Secretary.*

## SAINT CLAIR COUNTY

A regular meeting of the Society was held at the Harrington Hotel, Port Huron, Michigan, Tuesday, March 20, 1934. At 6:30 p. m. supper was served to nineteen members and three guests and before the meeting convened four additional members were present.

The meeting was called to order at 8 p. m. by the president, Dr. A. B. Armsbury. The minutes of the preceding meeting were read and approved. Several communications from the office of the secretary of the Michigan State Medical Society were read. Dr. Henry C. Wass of Saint Clair, Michigan, was elected to active membership in the Society. The application for membership of Dr. Ralph M. Burke of Emmett, Michigan, was read and referred to the Censors for action.

The president then introduced the guest-speaker of the evening, Dr. Julius H. Powers of Saginaw, whose subject was "Hand Infections." Dr. Powers interspersed his remarks with lantern slide views to bring out salient points in the consideration of his subject. The speaker stressed the following points: lateral incisions for felon, teno-synovitis and arm drainage rather than incisions directly onto the ten-

dons and nerves, crucial incision in carbuncle with undercutting, the use of vaselin gauze for drains which should as a rule be removed within forty-eight hours, no early incision in lymphangitis but rather a late incision after localization, the use of general anesthesia for incision and adequate drainage rather than insufficient drainage referred to as a medical incision so often the case when no anesthetic is used and the constriction of the limb at a higher level for one hour after incision to avoid systemic toxemia.

Discussion was opened by Doctor Thomas, followed by Doctors Smith, Sites, Burley, MacKenzie and Heavenrich. Doctor Powers then closed the discussion.

Upon motion by Doctor Heavenrich the speaker was given a rising vote of thanks by the Society for his long trip and fine address.

The meeting adjourned at 9:30 p. m.

A regular meeting of the Society was held at the Harrington Hotel, Port Huron, Michigan, Tuesday, April 3, 1934.

Supper was served to about twenty-five members and guests and prior to the beginning of the program twenty-eight members and four guests were present.

The meeting was called to order by President Armsbury. The minutes of the preceding meeting were read and approved. An application for membership was received from Dr. Wilbur S. Henderson and referred to the Censors for action at the next meeting. Dr. Ralph M. Burke of Emmett was elected to active membership in the Society. A letter from Doctor Kidner of Detroit was read and the Society selected one of the three tentative subjects suggested by Doctor Kidner for the meeting of May 15, 1934, at which time Doctor Kidner is to be our guest-speaker.

A letter was read from the Chamber of Commerce naming the Public Health Committee of that organization comprising Doctors Attridge, Cooper and Battley. Doctor Cooper, chairman of the Medical-legal Committee of the Society, read an opinion from the office of the Prosecuting Attorney with regard to physicians divulging diagnoses to the Welfare Commission of the County in cases where persons on the welfare list were receiving treatment. The opinion expressed was that such information so received by the physician is not a privileged communication and therefore may be divulged to the Welfare Commission, but notwithstanding the physician should endeavor to secure the permission of the patient before so doing. A motion to record said opinion and place the letter on file was carried.

The president read a letter from the Probate Judge advising the members of the Society to refrain from sending CCC cases to the hospital for treatment unless the same were most urgent. The Judge further stated that unless this was observed there was a danger of the County Supervisors rescinding their action to permit local hospitalization owing to the expense involved. Doctor Heavenrich reported to the Society that the Kroger Grocery Company was protected by adequate insurance in compensation cases and that the local physicians would be allowed regular fees for their services in such cases. The doctor further stated that he was advised the company would allow a fee of two dollars for making physical examinations of new employees.

The president appointed a special committee consisting of Doctors Burley and Brush to call upon the management of the Harrington Hotel and arrange for better dining room service for our meetings.

At the request of the president, Doctor Heavenrich introduced the guests-speaker of the evening:



Dr. Carl F. Moll of Flint. Doctor Moll addressed the Society upon the subject "Sciatica" and stressed the following points: His belief that occupation and exposure to wet and cold were both etiologic factors, that the condition was a great trial to industrial insurance companies, health insurance companies, and also to the physician, that males were preponderantly affected, that thin rather than fat persons were more often affected, that a careful taking of histories would frequently elicit trauma although care should be observed not to encourage the patient to do so, that a thorough painstaking physical examination should be made in every case and an effort made to find basic organic disease or focal infection, that rest in bed with a weight placed on affected leg and foot in extension apparatus was probably the best treatment in his opinion. Discussion by Doctors Sites, Attridge, MacKenzie and Heavenrich followed. A rising vote of thanks was given Doctor Moll for his long trip and splendid address.

GEORGE M. KESL, *Secretary-Treasurer.*

### MONROE COUNTY

The members of the Monroe County Medical Society and their ladies had a Valentine bridge party at the Monroe Country Club February 15, 1934. They invited the dentists of the county and their ladies. A large number attended and enjoyed the excellent dinner, Valentine decorations, the bridge game, and also the other refreshments besides the dinner. All present expressed their appreciation to the committee in charge, Dr. and Mrs. J. J. Siffer, of Monroe, and asked for another such party before the summer recess.

The March meeting of the society was held March 15, at the Park Hotel, Monroe, beginning with a steak dinner. Dr. C. D. Brooks, of Detroit, presented the subject "Biliary Tract Disease" in his usual highly informative and entertaining fashion. He illustrated his talk with lantern slides.

FLORENCE AMES, M.D., *Secretary.*

### WOMAN'S AUXILIARY, MICHIGAN STATE MEDICAL SOCIETY

MRS. ELMER L. WHITNEY, *President*  
18224 Wildemere Ave., Detroit

MRS. C. L. STRAITH, *Secretary-Treasurer*  
19305 Berkley Road, Detroit

State Medical Journal May 1934  
Dear Auxiliary Members:

It is time for us to begin thinking about attending the annual meeting of our National Auxiliary, which will be held in Cleveland, June 11 to 15, 1934.

Mrs. Clyde Cummer, wife of the president of the Ohio State Medical Society, has been appointed social chairman of the Auxiliary meetings. Every effort is being made to make our visit to Cleveland a huge success.

The Carter Hotel, in the center of the city, has been selected for headquarters and all the Auxiliary activities will be taken care of under the Carter roof. This year the Auxiliary will be on the first two floors, with the Exhibits and Committee rooms easy of access from the main lobby of the hotel.

A most unusual and interesting program has been planned for the business meetings of the Auxiliary. The rest of the time will be filled with many entertaining trips and social affairs arranged by our Cleveland hostesses. You will be kept so busy that your husband will scarcely realize that you are with him.

Because this convention is being held so near us, I feel this year is an opportune time for our Michigan members to attend. I know I do not need to urge those of you who have attended previous National Conventions. I do hope as many of you as possible will plan to attend this year. I can assure you that you will not only enjoy yourselves immensely, but you will also make many pleasant friendships, receive new ideas and inspirations for your auxiliary work, and will come home feeling you have had a very profitable vacation.

(Mrs. E. L.) IRENE H. WHITNEY.

*Bay County.*—Mrs. Robert H. Criswells was hostess to the Women's Auxiliary to the Bay County Medical Society at her home, 2131 Center Ave., Bay City, on March 14. Following the buffet dinner, which was attended by twenty-four members, Mrs. Paul Urmston reported on the State Auxiliary Executive Board meeting held in Detroit in January. Dr. Clyde Tarter, of Standish, then spoke on "Preventatives to Tuberculosis," illustrating his talk with slides.

(Mrs. Edwin C.) JOSEPHINE MILLER,  
*Publicity Chairman.*

*Kent County.*—Dr. William R. Torgerson discussed the medical and economic problems of Puerto Rico and Dr. H. E. Veldman spoke on China from the medical viewpoint at a meeting of the Woman's Auxiliary to the Kent County Medical Society, which was held at 2 o'clock Wednesday afternoon, March 21, in the club rooms of the Medical Arts Building. Fifty members were present.

Mrs. W. D. Lyman presided at the tea urn, arrangements for the tea being in charge of Mrs. Reuben Mauritis and Mrs. Lyman.

(Mrs. W. R.) ORBA DEAN TORGERSOHN,  
*Secretary.*

*Oakland County.*—Twenty-four members of the Oakland County Medical Auxiliary enjoyed a luncheon at the Willow Tea Room, in Royal Oak, on March 16. N. J. Quickstad, superintendent of schools in Royal Oak, gave an interesting account of some aspects of Mental Hygiene. A business meeting followed the talk. Plans are being made to entertain the Jury Club in the near future. There will be Hygeia exhibits at the Webster School, in Pontiac, and at the Auburn Heights School for their May P. T. A. programs.

(Mrs. R. H.) HELEN C. BAKER,  
*Publicity Chairman.*

*Wayne County.*—Several very fine artists are listed among the membership of the Woman's Auxiliary to the Wayne County Medical Society. That all might enjoy their work, an art exhibit, by and for members of the Auxiliary, was held during March. Mrs. Jack Agins was co-chairman of the Program Committee for this event.

All who had done any work in oil painting, sculpture, water colors, etching, dry-point, or pencil and ink were invited to contribute. Mr. Sarkis Sarkisian, Mr. John Pappas, and Miss Mildred Williams made up the impartial jury chosen by Mrs. George Kemperman to select the exhibits.

The exhibit opened on Sunday afternoon, March 11, with a musical tea at the club house. On this occasion Mrs. H. Lee Simpson gave a most interesting and enlightening talk on "Modern Art." In the absence of Mrs. Claire L. Straith, president of the Auxiliary, Mrs. Frank W. Hartman, vice president and program chairman, introduced the speaker. Much enjoyment was added to the program by the playing of a group of Russian Gypsy Classics by Dr. and Mrs. Jack Agins. The Board of Directors



acted as hostesses, and Mrs. Wm. J. Stapleton, Jr., and Mrs. A. B. McGraw, presided at the tea table.

The display was on view at the club house each afternoon until March 15. It was also a feature of the regular monthly meeting of Tuesday, March 13. On this occasion Mrs. Simpson again gave a short talk on art, her subject being "Understanding Contemporary Expression."

She said that people who have not studied art are prone to criticize what they personally do not understand or have not experienced. It is only natural to like paintings of scenes which we know and experiences which we have had. Those who have spent some time in the country prefer pastoral scenes, while those who have always lived in the city prefer pictures of city life and people. To appreciate art we must cast our personal prejudices aside and seek to understand the feeling that the artist has endeavored to express within the limitations imposed upon him by the materials he has used.

All who attended the series of Ancient History lectures, sponsored by the Study Group of the Auxiliary, regretted the completion of the course. It is hoped that the meetings will be continued next year.

On March 6, Mrs. Roger V. Walker, chairman of the Social Committee, entertained the members of the executive board of the Woman's Auxiliary, at luncheon in her home, preceding the monthly board meeting.

The Auxiliary served refreshments after the delightful plays presented by the Dramatic Section of the Wayne County Medical Society at the Players' Playhouse, on Saturday, March 10.

(Mrs. Clifford) LORRAINE E. LORANGER,  
*Publicity Chairman.*

## MICHIGAN'S DEPARTMENT OF HEALTH

C. C. SLEMONS, M.D., Dr.P.H., Commissioner  
LANSING, MICHIGAN

### COMMUNICABLE DISEASES

Scarlet fever incidence is unusually high at present, with 7,716 cases reported for the first three months of the year. This is considerably above that for the same period in 1933, and the 1933 level was in turn far above the average for the preceding five years. The total number of deaths in 1933 was 157 as compared to 112 for 1932, a 40 per cent increase. The peak of the seasonal curve usually continues until May before there is much tendency to decline. In 1933 the peak occurred in May.

While there is a question as to whether the actual incidence of scarlet fever is on the increase or whether we are merely having a better degree of reporting, it would appear that the number of cases is greater than heretofore.

The number of mild cases now occurring results in many being unreported. There are a great many that have no medical attention. Nevertheless, it may be that there is some tendency toward increase in virulence, at least in some local communities.

The Michigan Department of Health receives many calls for Dick test toxin and toxin for active immunization. These products are no longer being distributed. Scarlet fever antitoxin has been supplied in limited quantities and its use has been advised therapeutically only for the severely toxic case.

In the Upper Peninsula there are a number of scattered communities, particularly in the western section, in which there are some rather intensive outbreaks. For the most part, the northern half of the lower peninsula is relatively free. The tier of counties on the southern border is also rather free, judging from the number of reported cases. Some of the more populous counties which have a lower than average incidence are Bay, Saginaw, St. Clair, Macomb, and Wayne. Those which have been showing a very high incidence are Genesee, Kalamazoo, Muskegon, Ingham, and Kent.

Health officers and physicians are urged to keep on the lookout for scarlet fever cases, particularly those that are mild or that have atypical symptoms. All cases which can be so diagnosed should be reported and quarantined according to the regulations.

Comment has been made from time to time during the last year or two regarding the extremely low incidence of smallpox. There has recently been an increase in the reported cases of this disease. It is evident that quite a few of the cases reported as smallpox are chickenpox, but there has been some increase in the number of cases which are apparently bona fide.

The principal focus has been in the rural parts of Houghton County. Whatever other cases of the disease there may actually be in the state, they are very much scattered. From January 1 to March 31 the number of cases of smallpox reported totalled thirty-three.

The incidence of typhoid fever is about normal for the season, there being a minimum number of cases. One small outbreak of more than usual interest occurred on Beaver Island. Three cases, all using milk from the same source, occurred in March. The milk supply in question was a small one, with only five families concerned. The outbreak is of interest because of its location and the season of the year, and the epidemiological possibilities. The carrier who was the source of the outbreak was located.

Several cases of typhoid have occurred recently in the city of Saginaw. Three of these were apparently water-borne and due to the use of a private well.

All other cases occurring throughout the state have been scattered.

Diphtheria continues to show a downward trend, the number of cases so few that it might be said to be a rare disease. However, this should not be considered as conclusive evidence that the fight against diphtheria has been won. Considerably more immunization must be done among young children before this can be an assured fact.

The season for measles is at hand, and it cannot be said too often that this is a dangerous disease for young children. If a child contracts measles before he is a year old his chances of dying are more than 50 times greater than if he has the disease between the ages of five and fifteen. A high incidence of this disease is not expected throughout the state this year, but undoubtedly there will be quite a few communities that will have their "measles year" resulting in sharp outbreaks. Health officers and physicians are again reminded that a baby or young child who is known to have been exposed to the disease may be protected previous to the fifth or sixth day after exposure by the use of convalescent serum or whole blood from an immune person.

Dr. R. B. Howard, District Health Officer of the four-county consolidated district made up of Alpena, Cheboygan, Montmorency and Presque Isle Counties,



with headquarters at Rogers City, has resigned. Dr. Gordon B. Moffat, Acting Health Officer of Genesee County, has been appointed to fill the vacancy and will assume his duties at Rogers City on May 1.

Dr. Leslie Lambert, who is at present taking post-graduate work at the School of Hygiene and Public Health at Johns Hopkins University, will resume his work as Genesee County Health Officer on June 1. C. D. B.

#### KAHN TEST REESTABLISHED

Reestablishment of the Kahn test in the laboratories of the Michigan Department of Health on April 15, 1934, was made possible by an appropriation of the second special session of the Legislature. Since the discontinuance of the test on July 15, wide protest has come from physicians of the state, especially those in rural areas.

The test will apply only to patients who cannot afford to pay the commercial laboratory fee. The new examination blank for specimens carries the following statement to be signed by the physician: "I certify that this patient has stated to me that he (she) cannot pay the regular commercial laboratory fee for this blood test."

#### SUICIDES AND HOMICIDES

The number of suicides in Michigan, which has mounted steadily since its spectacular rise in 1930, dropped in 1933. Only 816 persons took their own lives last year, in contrast to the high mark of 937 in 1932.

The increase in suicides has been widely commented upon as an accompaniment of the depression. It began in 1930 when 812 suicides were reported compared to 674 in 1929. Another sharp rise followed in 1931, when the number went up to 925, to mount to 937 in 1932. The drop to 816 in 1933 makes that year almost exactly balance 1930.

Homicides have decreased steadily within the past five years. They dropped from 395 in 1929 to 337 in 1930, to 285 in 1931, to 267 in 1932, and to 239 in 1933.

#### VIOLENT DEATHS IN 1933

In the year 1933, 9 per cent of all the deaths in Michigan were due to violence. There were 4,344 such deaths, 3,289 accidents, 239 homicides, and 816 suicides. This is a slight increase over the 8.5 per cent of 1932.

It is, of course, inevitable that there should always be some deaths due to accidents, no matter how careful we are, but when we consider that 1,259 of the accidental deaths in 1933 were due to the use of the automobile, it must be evident that there is something radically wrong with our control of the highways. This included seventy-nine deaths due to railroad and automobile collision and ten due to street car and automobile collision, the other 1,170 being due to automobiles alone. This included not only the accidents to cars, but to pedestrians as well. We are not able to differentiate between these figures. This is a slight increase from the 1932 total of 1,222 deaths due to these causes.

The next most important cause of accidental deaths was falls, with 753 deaths due to this cause compared with 651 in 1932.

Drownings followed falls, with 281 deaths in 1933, a sharp reduction from the 346 in 1932.

There was a slight decrease, also, in the number of deaths from burns and a marked decrease in deaths from conflagration. Firearms showed an increase, and deaths due to excessive cold were markedly increased, there being twenty deaths from this cause in 1933 compared with three in 1932. On the

other hand, there were seventy-nine deaths from sun-stroke, as compared with only thirty in 1932.

The number of deaths from each accidental cause in 1933 and in 1932 appears in the following table:

	1933	1932
Accidental Absorption of Gas.....	65	82
Acute Poisoning .....	56	57
Conflagration .....	45	63
Burns .....	184	188
Suffocation .....	36	48
Drowning .....	281	346
Firearms .....	94	86
Cutting or Piercing.....	10	10
Falls .....	753	651
Injury by Animals.....	32	27
Excessive Cold .....	20	3
Excessive Heat .....	79	30
Lightning .....	12	4
Electricity .....	20	20
Other Accidents .....	130	142
Mines and Quarries .....	8	7
Agricultural Machinery .....	20	10
Elevators .....	10	7
Other Machinery .....	28	31
Other Railroad Accidents.....	78	83
Other Street Car Accidents.....	11	16
Motorcycle Accidents.....	19	7
Other Land Transportation.....	23	22
Air Transportation .....	16	17
Railroad and Auto Collision.....	79	86
Street Car and Auto Collision.....	10	6
Auto Accidents .....	1,170	1,130
Total Auto .....	1,259	1,222
Total .....	3,289	3,179

W. J. V. D.

## OBITUARY

### DR. J. FRANK HACKETT

Dr. J. Frank Hackett, son of Dr. William A. Hackett of Detroit died at Harper Hospital on April 10th. Dr. Hackett had been a sufferer from Bright's disease for nearly five years before he died. He was born in Detroit in 1899, where he received his preliminary education. After graduating from the old Central High School he attended the University of Michigan, where he obtained his degree of M.D. in 1924. A year's internship was spent in Harper Hospital, following which he entered upon a two-year period of study offered by the Mayo Foundation at Minnesota. Dr. Hackett opened an office on Livernois Avenue, Detroit, but after one year and a half of practice he moved to Silver City, New Mexico, where he spent two years. Returning to Detroit in 1929 he entered government service and was sent to St. Louis, where he remained until about a year ago. He is survived by his widow, Rose; a brother, J. B. Hackett and his father, Dr. William Hackett, all of Detroit.

### DR. DON D. KNAPP

Dr. Don D. Knapp of Flint died of heart disease at his home on March 19, 1934. He was born at Fenton, fifty-two years ago, where his father, Dr. Leonard E. Knapp, practiced for many years. Dr. Don Knapp was former health officer of Flint and up to the time of his death he was president of the staff of Hurley Hospital. He began practice in Flint in 1910. "The credit of our simple yet effective Code of sixteen Rules which has established a successful participating plan of taking care of the



medical needs of the indigent is entirely his," writes one of his colleagues. "He had acquired a rare experience in Public Health work by serving as health officer when the City was small and clinics were not in vogue and then again three years ago after the Health Department had established and maintained a full coterie of free clinics. This experience coupled with a keen analytical perception of sensing abuses, of placing departmental responsibilities, and a sympathetic understanding of human suffering gave him a rare judgment of fairness which is seldom encountered." Regarding his personal qualities the *Flint News* contained the following tribute: "Known to his wide acquaintance as a kindly, modest—even retiring—man, his colleagues in the medical profession respected him for these same qualities. He was always mentioned as a gentleman of the quiet type who found much pleasure outside his professional life in his hobby of gardening. Dr. Knapp was not only a student of medical science but a capable botanist. A year after Dr. Knapp started his medical work in Flint, he was made city health officer. His interest in public health problems never slackened and at the time of his death he was serving as president of Hurley hospital staff. He was a member of the committee representing the Genesee County Medical Society that drafted a plan for the care of the indigent sick by the county welfare administration. This plan is in use not only in Genesee county but also in most other counties in Michigan and many of its points were reflected in federal recommendations to states for handling sick dependents. "Dr. Knapp will be greatly missed, not only for the valuable service he rendered the community, but also for the qualities of friendliness and character for which he was prized."

#### DR. BYRON LONEY

Dr. Byron Loney of Detroit died on March 16, 1934. He was born at Walla Walla, Washington, in 1883. In 1895 his father died and in 1903 his mother also died. The son moved to Toronto, where he was raised by a maiden aunt, a teacher in the Toronto schools. Byron Loney studied medicine and in 1916 obtained the degree of Bachelor of Arts and Bachelor of Medicine at the University of Toronto. After graduation he came to Detroit to serve his internship, and in 1918 he became lieutenant in the Medical Corps of the United States Army at Camp Custer and received his discharge the following year. He became associated with the late Dr. Max Ballin until 1923, when he was appointed medical officer of the Detroit Edison Company, a position he held up to the time of his death. Dr. Loney was a member of the Wayne County Medical Society, Michigan State Medical Society and of the American Medical Association as well as Detroit Academy of Surgery and a Fellow of the American College of Surgeons. In 1919 he married Louise McKinnon, who survives him. He also leaves one son, Robert, 12, a daughter, Mary, 8, and two brothers, W. T. Loney of Saginaw, Michigan, and Milton R. Loney of Walla Walla, Washington.

#### DR. JAMES N. GARBER

Dr. James N. Garber of Detroit died at Grace Hospital, April 7, 1934. Dr. Garber was born in Pennsylvania on November 2, 1868. He obtained his Bachelor of Science from Ohio Northern University in 1904 and also graduated in medicine from the Detroit College of Medicine and Surgery in 1907. He established the Garber Hospital, corner of Trumbull and Marquette Avenue, Detroit, in 1902. He is survived by his widow and one son, Ralph. Dr. Garber was a member of Wayne County Medical Society, Michigan State Medical Society, and American Medical Association.

## GENERAL NEWS AND ANNOUNCEMENTS

Delegates are requested to present a report upon the Special Session at their next county meeting.

We are glad to report the recovery of Councilor George C. Hafford from serious injuries received in an automobile accident while en route to Florida.

The sympathy of our members is extended to President G. L. Le Fevre, by reason of the death of his brother on April 10, 1934.

A postgraduate conference will be held in Alpena on May 9. This conference is in honor of Dr. D. A. Cameron of Alpena, who has completed fifty years of practice in that community.

Dr. William Seymour, of Detroit, has tendered his resignation to the Public Welfare Commission. Dr. Seymour was appointed to the commission by Mayor Frank Doremus in 1923 to fill the vacancy created by the resignation of Dr. Max Ballin. Dr. Seymour, however, maintains his position as attending surgeon on the staff of the Receiving Hospital.

According to the Michigan Maternal Health League No. 6, 187 babies were born to indigent and welfare families in Detroit in 1933. According to statistics given out by the Welfare Department, City Physician's office and the Board of Health the estimated cost to the municipality is \$169.28 for each infant the first year of life.

Dr. T. J. Carney and Dr. R. A. Wilcox, owners of the Carney-Wilcox hospital in Alma, completed a business deal with the Michigan Masonic Grand Lodge officers on Saturday evening whereby they became the owners of the Michigan Masonic Home property on North State street, including the hospital building and also the lot upon which the old home is being razed.

The doctors plan to make the hospital into a county general hospital where doctors of this county may bring their charges. But due to the fact that the Masonic Home is now being wrecked and torn down, the grounds having to be filled in and graded, it probably will be fall before the hospital will be equipped and ready for use. It is a new, modern building, fireproof, and contains twenty-four rooms.

It is expected the present Carney-Wilcox hospital will be retained to use for convalescent patients.

#### DETROIT COLLEGE OF MEDICINE ALUMNI DAY

Annual Alumni Day of the Detroit College of Medicine and Surgery (now the Wayne University College of Medicine) will be held on Thursday, June 7th. Beginning at 9 A. M. at the College Auditorium, diagnostic medical clinics will be held by Dr. Charles Phillips Emerson, Professor of Medicine, Indiana University School of Medicine and William Carpenter MacCarty, director of the Department of Surgical Pathology of the Mayo Clinic. Dr. Emerson was on the Alumni Clinic program in Detroit several years ago and his presentation was so outstandingly brilliant that few who heard him then would willingly miss him this time. Dr. Mac



Carty's international reputation in general pathology and cancer diagnosis particularly is well known as an added feature. These two men will also conduct a clinico-pathological conference. The Detroit Dermatological Society has arranged a skin clinic which is expected to exceed in interest and teaching value previous clinics for which they are rightfully famous. A noon-day luncheon has been arranged for at the College Auditorium.

The banquet will be held at the Hotel Statler and will be in part a testimonial dinner to Doctors Angus McLean, Don M. Campbell and Andrew Bidle. Doctor James W. Inches will be the principal speaker of the evening. The banquet is the occasion of Class Reunions of the following classes and the chairman of each of these classes has been communicated with and he in turn will contact each member of his class: 1934, 1929, 1924, 1919, 1914, 1909, 1904, 1899, 1894, 1889, etc.

#### AMERICAN MEDICAL GOLFERS PLAY IN CLEVELAND, JUNE 11

The American Medical Golfing Association will hold its twentieth annual tournament at the Mayfield Country Club in Cleveland on Monday, June 11, 1934.

Thirty-six holes of golf will be played in competition for the fifty trophies and prizes in the eight events. The trophies include the Association Championship for thirty-six holes gross, the Association Handicap Championship for thirty-six holes net, the Choice Score Handicap Championship for thirty-six holes gross, the low gross Eighteen Hole Championship, the low net Eighteen Hole Handicap Championship, the Maturity Event limited to Fellows over 60 years of age, the Oldguard Championship limited to competition of past presidents, and the Kickers Handicap. Other events and prizes will be announced at the first tee.

Dr. Homer K. Nicoll of Chicago is president and Dr. Charles Lukens of Toledo and Dr. John W. Powers of Milwaukee are vice-president of the American Medical Golfing Association, which was organized in 1915 by Dr. Will Walter, Dr. Wendell Phillips and Dr. Gene Lewis, and now totals 1,100 members representing every state in the Union. The living past presidents include Dr. Wendell Phillips of New York, Dr. Thomas Hubbard of Toledo, Dr. Fred Bailey of St. Louis, Dr. Edward Martin of Philadelphia, Dr. Robert Moss of San Antonio, Dr. Charlton Wallace of New York, Dr. Will Walter of Chicago and Charlottesville, Va., Dr. James Eaves of San Francisco, Dr. Chester Brown of Danbury, Conn., Dr. Samuel Childs of Denver, Dr. W. D. Sheldon of Rochester, Minn., Dr. Walter Schaller of San Francisco, Dr. Edwin Zabriskie of New York, Dr. Frank Kelly of Detroit and Dr. John Walsh Croskey, Philadelphia.

#### CLEVELAND COMMITTEE

The Cleveland Committee is under the chairmanship of Dr. John B. Morgan, 1301 Medical Arts Building, Cleveland, Ohio. He will be assisted by Drs. R. H. Birge, A. V. Boysen, E. F. Freedman, F. T. Gallagher, Secord Large, E. P. McNamee, J. J. Marek, Theodore Miller, U. V. Portmann and M. A. Thomas.

The Mayfield Country Club of Cleveland is described by Chairman Morgan as "probably the finest course in the district, and certainly one of the most interesting. Many championships have been held on this course, and I am sure the visiting doctors will be delighted with it in every sense of the word. It has a most beautiful club house, and we can promise a merry nineteenth hole and a dinner fit for a champion."

#### APPLICATION FOR MEMBERSHIP

All male Fellows of the American Medical Association are eligible and cordially invited to become members of the A. M. G. A. Write to the Executive Secretary, Bill Burns, 4421 Woodward Avenue, Detroit, for an application blank. Participants in the A. M. G. A. tournament are required to furnish their home club handicap, signed by the secretary. No handicap over 25 is allowed, except in the Kickers'. No trophy is awarded a Fellow who is absent from the annual dinner.

The twentieth tournament of the American Medical Golfing Association promises to be a happy affair, attended by some two hundred medical golfers from all part of the United States.

### THE DOCTOR'S LIBRARY

*Acknowledgment of all books received will be made in this column and this will be deemed by us a full acknowledgment to those sending them. A selection will be made for review, as expedient.*

**ALLERGY IN GENERAL PRACTICE.** By Samuel M. Feinberg, M.D., F.A.C.P., Assistant Professor of Medicine and Attending Physician in Asthma and Hay Fever Clinic, Northwestern University Medical School; Professor of Medicine in the Cook County Graduate School of Medicine; Attending Physician, Cook County Hospital, Chicago. Illustrated with 23 engravings and a colored plate. Lea and Febiger, Philadelphia, 1934.

Feinberg's Allergy in General Practice is written, as intimated, primarily for the general practitioner. It is mainly devoted to Asthma and Hay Fever, which are dealt with from the etiologic, diagnostic and treatment viewpoints. Other allergic diseases are summarized in a clear and helpful manner. A generous reference list of original work on allergic disorders, is presented as a bibliography.

**AMERICAN JOURNAL OF DIGESTIVE DISEASES AND NUTRITION.** Editor in Chief, Dr. Frank Smithies, Chicago, Illinois. Vol. I, No. 1.

The reviewer is pleased to welcome this new journal to the field that seems not overcrowded, namely that branch of Medicine which is concerned with Diseases of Nutrition and Digestion. The domain is large. The departments represented here are Clinical Medicine, Diseases of Digestion, Nutrition, Parasitology, Therapeutics, Roentgenology, Abdominal Surgery, Surgery of the Lower Colon and Rectum. The editorial council as well as Editors are nationally known in their various fields of work. This new magazine has a wider appeal than represented by those whose work is limited to gastro-enterology.

**PRACTICAL ANESTHESIA FOR DENTAL AND ORAL SURGERY. LOCAL AND GENERAL.** By Harry M. Seldin, D.D.S. Director of the Division of Dentistry, Department of Hospitals, City of New York; Honorary President of the Eastern Society of Dental Anesthetists; Formerly Chief of the Department of General Anesthesia, New York University, College of Dentistry. 525 pages, illustrated with 203 engravings. Published 1934. Lea & Febiger, Philadelphia, Pa. Price \$7.00.

This work meets the need of a comprehensive, accurate and practical textbook on dental anesthesia which includes of course anesthesia in jaw fractures which will meet the need not only of the dental profession but also of the medically trained oral surgeon. Explicit directions are given on both local and general anesthesia. Indications for each kind of anesthetic are clearly set forth. Sufficient knowledge of anatomy and physiology is presented to render the anesthetic technic intelligible. Likewise simple and accurate means are taught in the way of estimating the physical state of the patient.